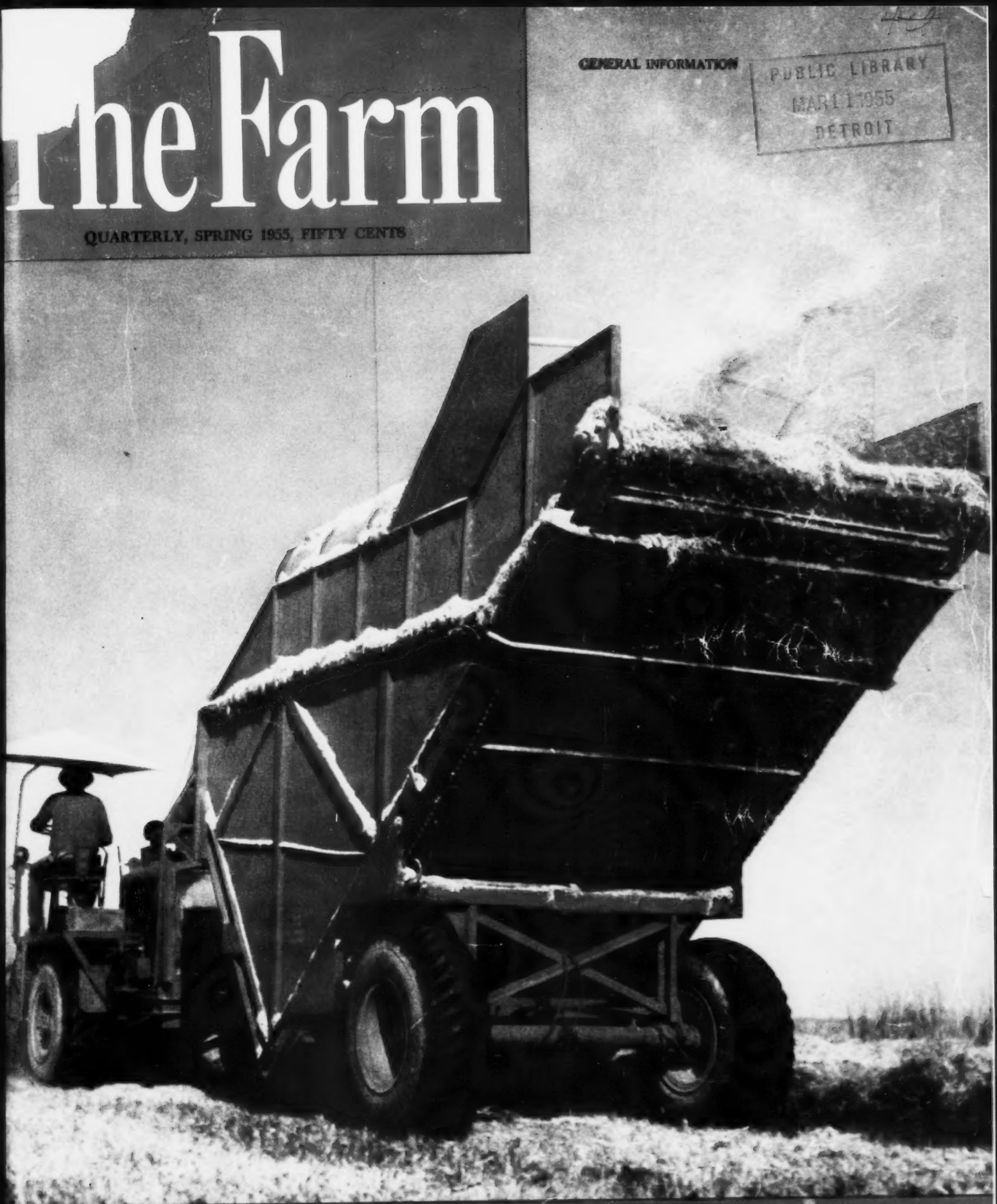
The Farm

QUARTERLY, SPRING 1955, FIFTY CENTS

GENERAL INFORMATION

PUBLIC LIBRARY
MAR 1 1955
DETROIT



Special Issue

IRRIGATION HAY SILAGE HIGH ANALYSIS FERTILIZER

New equipment Latest information Farm-tested methods

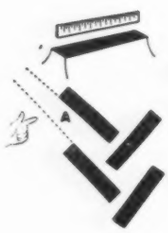
YOU CAN'T PICK YOUR FOOTING—

but you CAN pick the tire that takes tough jobs in stride!

RULER-STRAIGHT LUGS WITH "WEDGE-IN" ACTION take a better grip on frost-slippery grass, snow, sand, loam, mud – whatever footing the day's work dishes out. That's how Goodyear's farm-proved Super-Sure-Grips save you time and money the year round.

Other savings, too – in stronger tire bodies and longer, more even tread-wear – that's why *more farmers surveyed prefer Goodyears than all other makes of tractor tires PUT TOGETHER!*

Goodyear, Farm Tire Department, Akron 16, Ohio



HERE ARE SOME SUPER-SURE-GRIP FEATURES THAT DO IT:

EXCLUSIVE, RULER-STRAIGHT LUGS, built closer together at shoulders, (A) take a "wedge-in" bite that *firms* loose soil—gives "the greatest pull on earth"!

O-P-E-N C-E-N-T-E-R helps *ruler-straight* lugs bite deeper, pull better!

LONG, EVEN WEAR – ruler-straight lugs work evenly against soil, roll smoothly on road—and so wear slowly and evenly!

RE-LUGGING SAVINGS—its vastly stronger body keeps Super-Sure-Grip *fit* to re-lug or retread—and *re-use!*

TRIPLE RIB
FRONT TRACTOR TIRE

Worthy companion of Super-Sure-Grip, the field-proved Triple Rib combines good steering with maximum flotation. Super-rugged shoulder ribs shrug off scuffs, give long, useful tire life.

GOODYEAR

Super-Sure-Grip—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Super-Sure-Grip Tractor Tires

MORE FARMERS PREFER GOODYEARS THAN ALL OTHER MAKES OF TRACTOR TIRES PUT TOGETHER!

FAMOUS ON FARMS... FAVORITE OF FARMERS

INTERNATIONAL Trucks rate high with farmers because International Harvester builds trucks that can take the rough, rugged going of farm work – with minimum operating expense, minimum time out for maintenance.

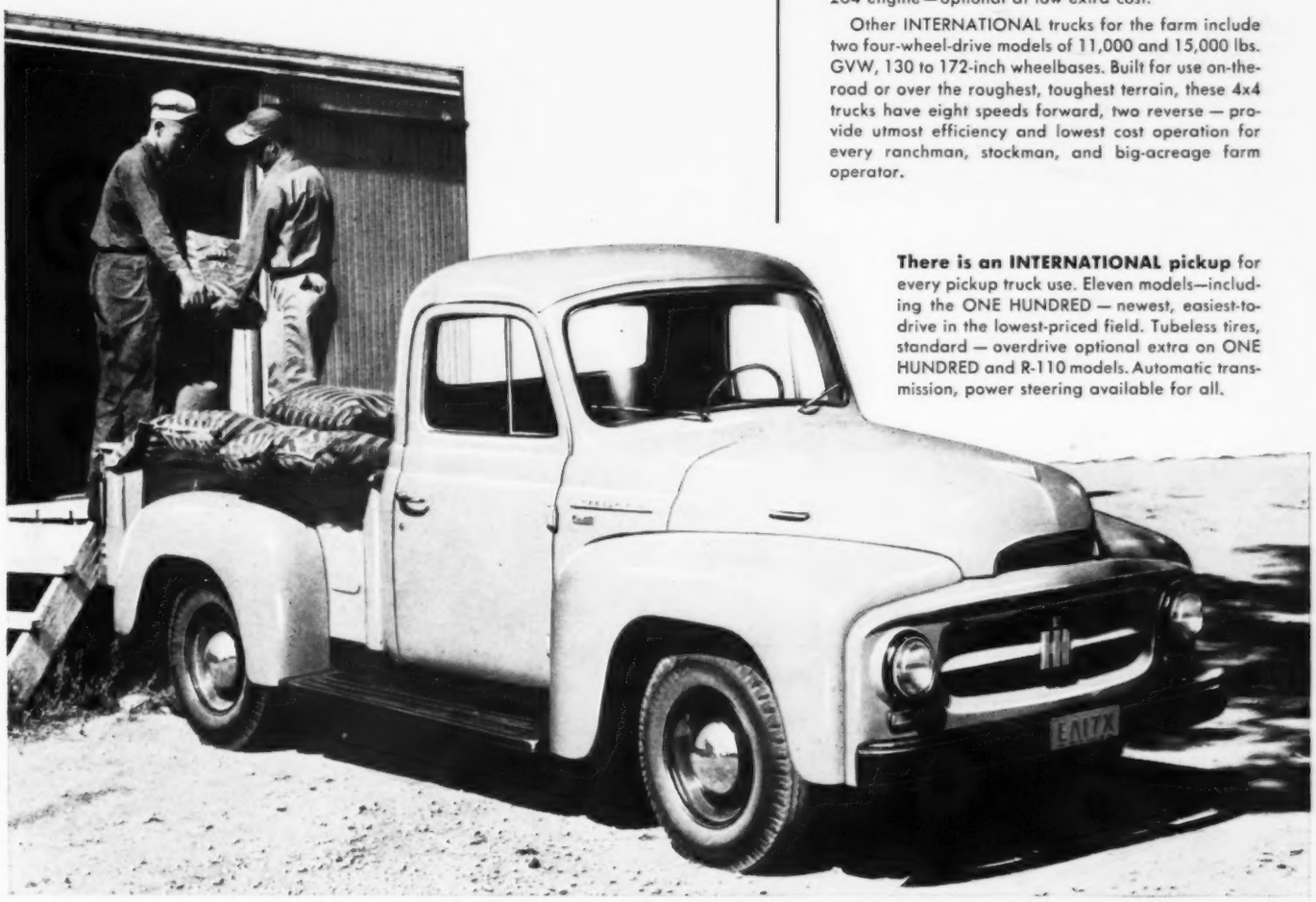
What's more, INTERNATIONALS are extra-easy to ride in, drive and maneuver. Their big, roomy, Comfo-Vision cabs, agile performance, and easy handling provide passenger car comfort and convenience . . . in the field or into town.

On every count – for any job – an INTERNATIONAL is your best farm truck buy. Visit your nearby INTERNATIONAL Dealer or Branch and get complete details.

INTERNATIONAL HARVESTER COMPANY • CHICAGO

An INTERNATIONAL R-160 Series medium-duty truck with combination stock rack and grain body is the ideal all-purpose truck for the farm. Now available with power steering and all-new 140-hp Black Diamond 264 engine—optional at low extra cost.

Other INTERNATIONAL trucks for the farm include two four-wheel-drive models of 11,000 and 15,000 lbs. GVW, 130 to 172-inch wheelbases. Built for use on-the-road or over the roughest, toughest terrain, these 4x4 trucks have eight speeds forward, two reverse — provide utmost efficiency and lowest cost operation for every ranchman, stockman, and big-acreage farm operator.



There is an INTERNATIONAL pickup for every pickup truck use. Eleven models—including the ONE HUNDRED — newest, easiest-to-drive in the lowest-priced field. Tubeless tires, standard — overdrive optional extra on ONE HUNDRED and R-110 models. Automatic transmission, power steering available for all.

International Harvester Builds **McCORMICK**® Farm Equipment and **FARMALL**® Tractors...Motor Trucks...Industrial Power...Refrigerators and Freezers

See the season's new TV hit, "The Halls of Ivy," with Ronald Colman and Benita Hume, CBS-TV, Tuesdays, 8:30 p.m., EST

INTERNATIONAL® TRUCKS

"Standard of the Highway"

Get MORE for your money with SHUR-RANE®

PORTABLE SPRINKLER IRRIGATION

engineered to your needs!

THESE BOOKLETS TELL HOW!

GET THESE FACTS:

HOW SHUR-RANE boosts corn yields over 50%... beats short droughts ...applies liquid fertilizer!

HOW SHUR-RANE increased grape crop by 350% on dry, rocky hillside!

HOW SHUR-RANE saves labor... vegetable man moves 1¼ mile of 4" pipe in 45 minutes!

HOW SHUR-ROLL (wheel-type) pastured 5 more cows and got $61.30 more milk profit per acre!

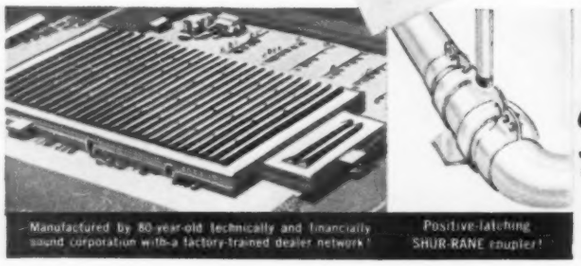
HOW SHUR-RANE in Fall produces bumper Spring small grain on marginal land... got waist-high barley on ¾" of natural rain!

HOW SHUR-RANE boosted seed cotton crop 68%!

HOW SHUR-RANE in pears matured huge, grade A crop for one picking and earlier, more profitable market!

HOW SHUR-RANE engineers make one acre work for two by analyzing crops, soil, terrain, weather, water and labor supply... even in so-called wet climates SHUR-RANE will bring bigger, guaranteed returns on your farm investment!

fmc TRADE MARK



Manufactured by 80-year-old technically and financially sound corporation with a factory-trained dealer network!

Positive-latching SHUR-RANE coupler!

Mail Coupon TODAY!

SHUR-RANE IRRIGATION SYSTEMS, Dept. FQ-51
Food Machinery & Chemical Corp., Box 145, San Jose 1, California

Send free informative literature as checked: ___farmer ___equipment dealer ___student ___cty. agt. or teacher

☐ corn ☐ cotton ☐ grains ☐ general ☐ pasture
☐ fall irrigation ☐ orchards ☐ supplemental irrigation ☐ fertilizer
☐ vegetables and commercial truck crops ☐ profits ☐ financing

My regular implement dealer is:

NAME _____

CITY _____ ACRES TO IRRIGATE _____

Name _____

Address _____ County _____ State _____

If in one of 14 Southeastern states, send to Florida Div., Lakeland, Fla.

Farm Quarterly, Vol. Ten, No. One. Editorial, Circulation and Executive Offices, 22 East 12th Street, Cincinnati, Ohio. Published quarterly by F. & W. Publishing Corp. Subscription price 50c a copy; $2.00 for one year; $3.50 for two years; $5.00 for three years. Add $1.00 per year extra for rates outside the United States and Canada. Entered as second-class matter at the Post Office, Cincinnati, Ohio, under the Act of March 3, 1879. (Title Reg. U.S. Pat. Off.)

FORD announces 2 NEW POWER SERIES

5 new models!

NEW! MOST POWERFUL FORD TRACTOR EVER!

For the first time in Ford Tractor history, you have a *selection* of Ford Tractor power sizes and models. Now, there are *five* new models in *two* power sizes.

Want more power? Then it's the 800 Series Fords; they have full 3-plow power—30% more than any previous Ford Tractor! They have a new 5-speed transmission to give you a wider range of operating speeds. One of these 800's has a new live power take-off. It's operated from the regular clutch pedal. No grabbing for extra levers!

You get new Tailored Traction, too. As always on a Ford, traction increases automatically on heavy pulls. New easy-on, easy-off wheel weights (sold separately) give you still more traction for *extra-heavy* pulls.

There are many more features your Ford Tractor and Implement Dealer will show you. See him for a new slant on what really modern tractor power can be. Tractor and Implement Division, Ford Motor Company, Birmingham, Mich.

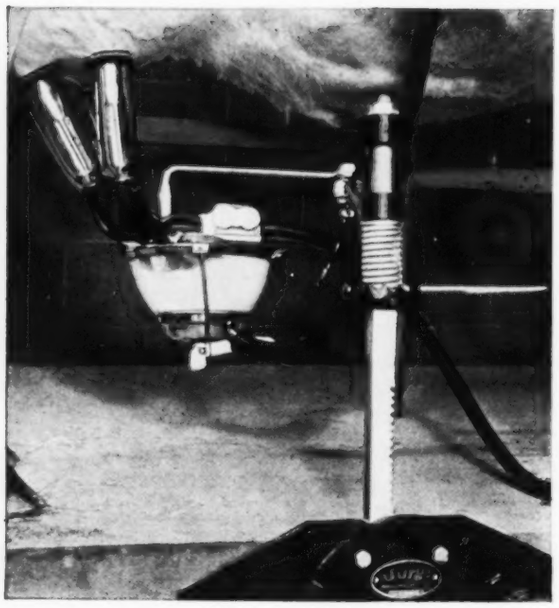
Ford Farming

GETS MORE DONE... AT LOWER COST

800 SERIES.
Full 3-Plow Power—
"Watch the Work Fly!"

600 SERIES. Full 2-Plow Power

Available in three models. Two have new 5-speed transmission. One equipped with the new, live PTO. Headlights and tail light are standard—and dozens of other features you expect from Ford.



SURGE VISIBILITY *lets you watch* TUG & PULL *work!*

Visibility right at the end of the teats...that's what you get with Surge Siphon Breaker cups and Surge Surcingle Breaker cups. You can see exactly what you're doing, and that's good!

Releasers, Milk Pumps, Milk Valves...Surge has them all...anything you need for every kind of pipeline milking.

Newest Surge labor-saver is "Electrobrain," the push-button, high-velocity, pipeline washer. Just push one button and the rinsing, draining, washing and sanitizing go right ahead automatically with no further help from you. "Electrobrain" won't forget...won't skimp the cleanup job.

On top of everything else and more important than anything else, any milking machine bearing the Surge name plate milks with genuine Surge TUG & PULL... protects your cows from creeping teat cups.

That's the big reason why hundreds of thousands of men will use Surge TUG & PULL to milk millions of cows tonight.

Visibility plus TUG & PULL spells satisfaction in milking.

Copyright 1955 Babson Bros. Co.

Surge

BABSON BROS. CO.

2843 West Nineteenth Street, Chicago 23, Ill.

ATLANTA • HOUSTON • KANSAS CITY • MINNEAPOLIS
SACRAMENTO • SEATTLE • SYRACUSE • TORONTO

Putting Pounds on Pigs

is part of our business, too!

"Carload Lot Inquiries are invited."

Pig raisers know that profits are not determined by guess work. It's weight that counts! And the *faster* a pig reaches market weight the greater the profit.

Each year Seagram produces thousands of tons of highly nutritious Seagram Solubles, rich in proteins, minerals, vitamins and other growth factors for use by feed dealers and mixers to balance the feeds they sell. For natural feeds alone seldom contain *all* of these vital growth ingredients.

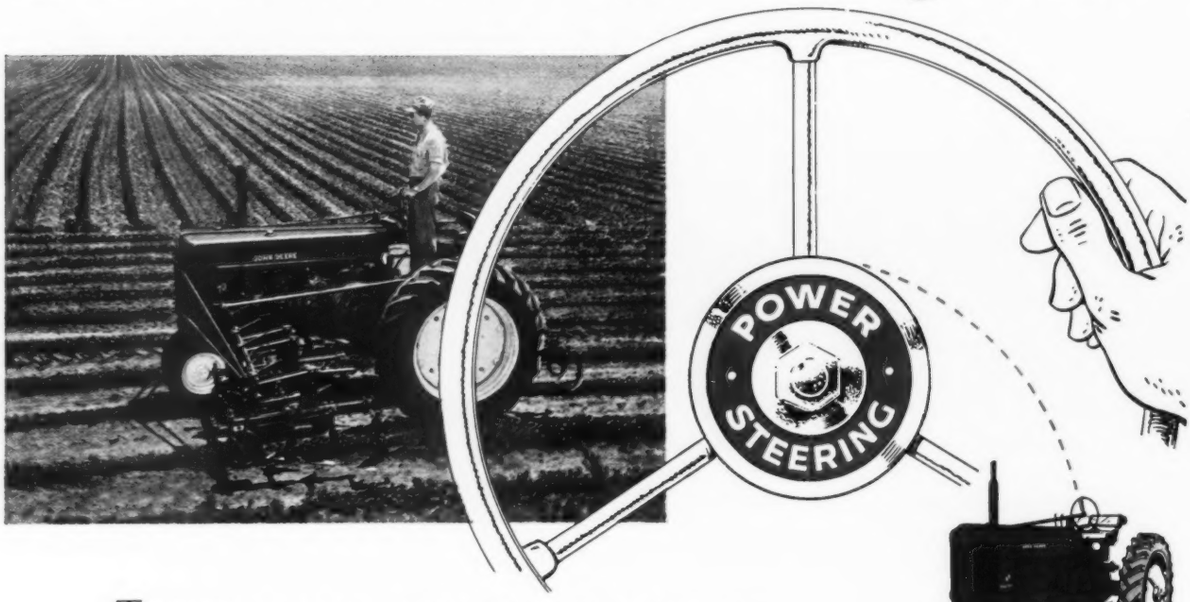
The importance of enriched feeds has been proved in feeding tests by experimental stations the nation over. In making available this nutritional feed supplement, we are helping to put pounds on pigs faster, so that pig raisers can realize greater profits!

Joseph E. Seagram & Sons Inc., Louisville 1, Kentucky

Seagram SERVICE TO AGRICULTURE

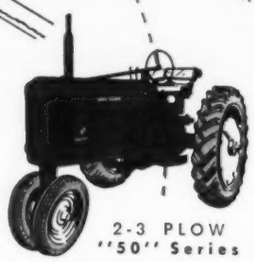
The *Future* is Here TODAY

in a JOHN DEERE *Power Steering Tractor*



THERE'S no doubt about it. Tomorrow, most farm jobs will be done with *power steering* tractors. And no wonder. For power steering means entirely new freedom from steering effort and driver fatigue . . . much easier handling every minute at the wheel, for every member of the family who drives a tractor.

John Deere pioneered factory-engineered power steering on row-crop tractors. It has been thoroughly field-proved on thousands of tractors, working in all sections of the country, under a great variety of field and crop conditions—*and owner acceptance has been overwhelming.* Today, John Deere Power Steering is available for a great family of tractors, ranging from the 2-3 plow "50" Series up to the king-size "70's." It's one of many 'way-ahead features you can enjoy *now*, when you choose a modern John Deere Tractor. Ask your dealer for a demonstration.

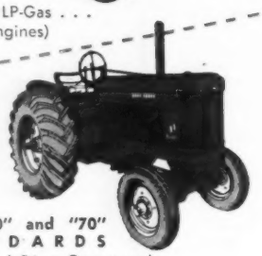


2-3 PLOW
"50" Series
(Gasoline . . . LP-Gas . . . All-Fuel Engines)

4-5 PLOW
"70" Series
(LP-Gas Model Illustrated)

3-4 PLOW
"60" Series
(Gasoline . . . LP-Gas . . . All-Fuel Engines)

4-5 PLOW
"70" Diesel
(New Fuel-Economy Champion)



New "60" and "70"
STANDARDS
(For Grain and Rice Growers)

Choose from America's
FIRST FAMILY
of
POWER STEERING
TRACTORS

JOHN DEERE
MOLINE, ILLINOIS

Send for FREE Literature

JOHN DEERE - Moline, Ill. - Dept. M54

Please send me free literature on John Deere Power Steering Tractors.

*Name*_____

*R.R.*_____ *Box*_____

*Town*_____

*State*_____

Ask your John Deere Dealer for a Demonstration

Try the Novel Rubber Band Test

Place a rubber band around the handles of a No. 234 "Multi-Plier," and grip a hard-to-hold object, like a piece of pipe. Suspend the plier by one handle only, and note how the jaws hold the weight securely without further pressure. Now try the same test with an ordinary two-piece plier — see what happens.

Sensational "Multi-Plier"

Increases Your Gripping Power 10 Times!

Unique, Three-Piece Compound Leverage Design Is Greatest Plier Development in 19 Years

Everyone should own PROTO's new "Multi-Plier"—a multi-purpose, multi-pressure plier that is really a "chest of tools in one." By using a patented three-piece design to compound the leverage, pressure applied to the handles is increased *ten times* at the jaws. That means you can hold square, round and even tapered objects securely with just a slight grip. The plier gets into hard-to-reach places, works safely at any angle, and holds small or large objects, having four different jaw opening positions. First try this revolutionary plier — No. 234 — at your PROTO dealer's, and then buy one! Send 10¢ for 68-page catalog of entire PROTO line to

PLOMB TOOL COMPANY

2266Q Santa Fe Ave., Los Angeles 54

Five More New Pliers

All are time savers for a multitude of industrial jobs. No. 204 is a handy midget diagonal side cutter. No. 222 is a long needle nose plier—ideal for many types of wiring. No. 225 is like the 222 except that it has a curved nose. No. 228 is an extra long, short nose needle nose plier. No. 243 is an all-purpose multi-groove joint plier.

5486

PROTO TOOLS

PROTO means PROfessional TOols

Eastern Factory—Jamestown, N.Y.
Canadian Factory—London, Ont.

The Farm QUARTERLY

Spring, 1955, Volume 10 Number 1

CONTENTS

STOCK

The Dairyman's Dilemma 40
Stilbestrol 48

CROPS

New Ideas in Grass Silage 32
New Ways to Make Good Hay 36
Grass in a Bag 52
Chemical Warfare 64

SOIL

Irrigation
- Why Irrigate 56
- Rain for Rent 57
- Starting for $500 58
- Big Irrigator 60

High Analysis Fertilizer 68

FEATURES

Corn Bread 42
Book Farmer 44
The Farmer Takes a Wife 50
The Hen That Lays the Easter Egg 62
Span of Life 76

DEPARTMENTS

Over the Back Fence 8
Letters 10
The Farm's Pictures 12
Poultry Yard 18
The Dairy Barn 22
Farm Books 24
Index to Advertisers 151

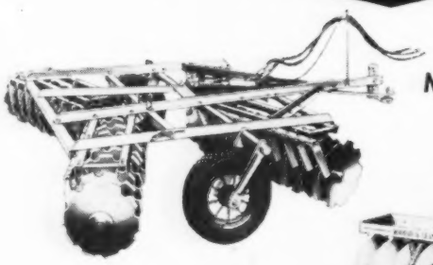
THE FARM QUARTERLY

22 East Twelfth Street, Cincinnati 10, Ohio

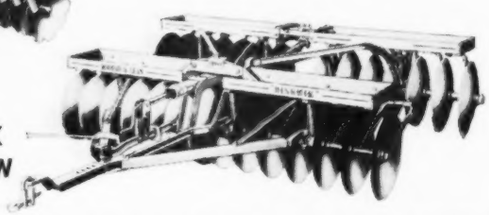
R. J. McGinnis, *Editor*
Fred Knoop, *Executive Editor*
Grant Cannon, *Managing Editor*
Chas. R. Koch, *Associate Editor*
Chester Charles, *Research Editor*
Kirk Polking, *Circulation Manager*
James Rosenthal, *Production Manager*
Fred Eichenberger, *Art Director*
Betty K. Green, *Editorial Secretary*
Aron M. Mathieu, *Business Manager*

Farm Quarterly is published Spring, Summer, Autumn and Winter. Price 50c a copy; $2.00 a year, $3.50 two years, $5.00 three years. Add $1 per year for countries outside USA and Canada. Send check to Farm Quarterly, 22 East 12th Street, Cincinnati 10, Ohio.

For more productive farming–
THE BEST IN FARM TOOLS
Roderick Lean
Reg. U. S. Pat. Off.
HARROWS



MOBIL-DISC HARROW

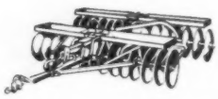


DISKWIK HARROW

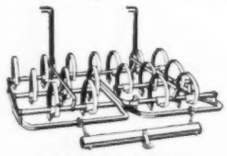
Here's a complete family of Roderick Lean Harrows for better farming everywhere—north, south, east or west. These production tools have all the desirable operating and mechanical features you've always expected in Roderick Lean implements. But these farm tools are now better than ever because . . .

- they are built the same way as your tractor and car—to automotive manufacturing standards.
- they are built of finest steel—the same high grades of steel you find in heavy-duty tractors and trucks.
- they are built by new and completely engineered assembly methods for easy handling and adjustment.
- they are built to give you long and carefree service, with fully-tested mechanical components of the kind used in all modern production machinery.

Send for descriptive bulletins, then be sure to ask your dealer for a field test of a Roderick Lean Harrow on your own farm.



TANDEM TRACTOR DISC HARROW



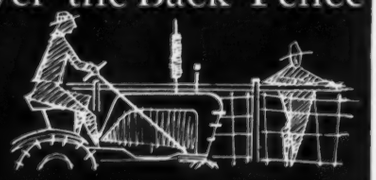
SPRING TOOTH HARROW

SPIKE TOOTH HARROW

FARM TOOLS DIVISION
PITTSBURGH FORGINGS COMPANY
CORAOPOLIS, PENNA.

FERTILIZER DEEP-FEEDER, CARRY-LIFT, AGRICULTURAL FORGINGS, DISC HARROWS, SPIKE-TOOTH HARROWS, SPRING-TOOTH HARROWS,
Pittsburgh FARM IMPLEMENTS · Roderick Lean · Vulcan · Harvey RACINE LINES
ROTARY HOES, MANURE SPREADERS, ROLLER PULVERIZERS, SPROCKET PULVERIZERS, FARM ELEVATORS, HAMMER MILLS, CORN SHELLERS

Over the Back Fence



More precious than fine gold—or diamonds The seed catalogues are out, and mighty fine reading they make sitting in front of the fireplace with a February blizzard howling outside. It beats all what startling facts one can glean from a flower catalog. For example, we had always thought that petunia seed, being so common and profuse, was comparatively cheap. Imagine our amazement when we did a little simple multiplication and came up with the figure of $12,568 per pound for Rose Marie petunia seed. Wholesale, that is, too. A further search revealed begonia seed at $2,560 per pound, cauliflower seed at $33 per pound, and sweet corn seed at 25 cents per pound. All these were in the same catalog, by the way. That Rose Marie petunia seed is what gets us, and we are wondering if our back yard could produce, say half a pound. That would be better than an oil well or a gold mine. There must be a catch somewhere.

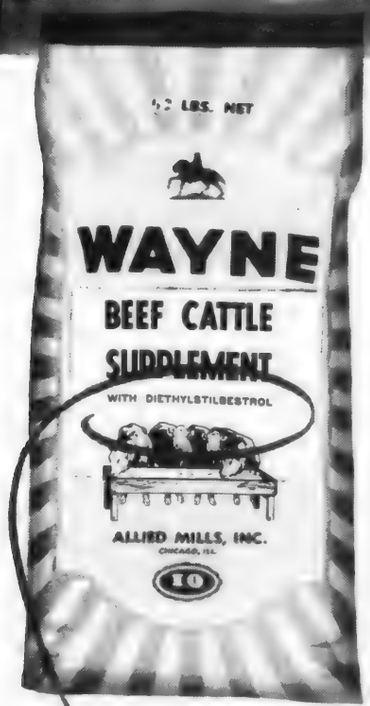
Calcutta takes its cattle off the streets An encouraging note from Calcutta informs us that the Indian government has launched a campaign to take the cattle off the streets. We once got ourselves into a peck of trouble in Calcutta when we kicked a sacred cow which was blocking the door to a tobacco shop. Since time immemorial cattle have roamed the streets down there, picking up a precarious living scavenging the gutters and garbage cans. They were injured by street cars and automobiles and wandered around in various stages of ruin. Anybody who caught up with them got a little contaminated milk. Now they will be hauled off the streets to special refuges outside the city where they can die in peace. The natives in these parts kill no living thing, a custom which had added considerably to sanitary problems.

"Trap Cats!" say Friends of Birds We have a communication from our good friend, Gertrude Charny, president of Friends of The Birds, indicating that the Society has not let up in its crusade to exterminate cats before they exterminate us. Miss Charny has induced the Friends to put up $1,000 in hard cash as a reward for anyone who induces a state legislature to pass a cat control bill.

AMAZING NEW FEED POWER in NEW WAYNE BEEF CATTLE SUPPLEMENT

with *diethyl* "stilbestrol"

for Faster and Cheaper Gains



DIETHYLSTILBESTROL

... often called "stilbestrol" ... is the synthetic hormone-like compound that boosts feeder cattle gains—slashes feed costs. Now available for fattening cattle.

Tested and Proved at Wayne Research Farm

Cattle feeders everywhere have followed the amazing results achieved by Iowa State College in the testing of "stilbestrol". Now it is ready to help you cut feeding costs—get more low-cost beef from your grain and roughage—in the new highly palatable Wayne Beef Cattle Supplement. Soybean, cottonseed and linseed oil meals blended to a 30% Protein level! Added vitamin A fortification! Here's what this great new development did in a 69 day test at the Wayne Research Farm:

Rate of Gain	**Increased 34%**
Without "stilbestrol"	2.29 lbs. per day
With "stilbestrol"	3.07 lbs. per day
Cost of Gain	**Reduced 22%**
Profit Per Steer	**Increased $16.93**

These remarkable results were achieved in a practical feedlot test. Fifty steers averaging 950 lbs. each were divided into 2 groups. "Stilbestrol" was added to the feed of one group—everything else was the same.

The 25 steers fed on the new Wayne Beef Cattle Supplement with "stilbestrol" gained a whopping 3.07 lbs. a day ... or, 212½ lbs. each in just 69 days!

ALLIED MILLS, INC., Builders of Tomorrow's Feeds ... Today!
Executive Offices: Chicago 4, Illinois—Service Offices: Fort Wayne 1, Indiana

For faster, cheaper gains ... feed the new Wayne Beef Cattle Supplement with "stilbestrol"—in the bag with the bright yellow stripes!

Doctors of Motors everywhere prefer Perfect Circles...the piston rings that assure more field time... less shop time for your tractor!

Profits result from keeping your equipment operating. And you'll get top performance with Perfect Circles because:

1. In Perfect Circle's 2-in-1 Chrome set, both top ring and oil ring are plated with thick, solid chrome!

2. Entire area of ring travel gets complete wear protection assuring longer engine life!

3. No tedious break-in...rings are lapped-in at factory!

These all add up to thousands of extra hours of peak engine performance under heavy load... more field time... less shop time! Insist on Perfect Circle 2-in-1 Chrome piston rings for your car, truck or tractor...for sustained power and positive oil control! Perfect Circle Corporation, Hagerstown, Ind.; The Perfect Circle Co., Ltd., Toronto, Ont.

Will It Finnish Him?

Sirs:

Your most interesting article on Finland in the Winter issue brought us on page 39 a picture of the "hardy Finn" who plunges into a lake or a snow bank. The readers of THE FARM

QUARTERLY may like to see my "hardy" husband, age 50, coming out of our swimming pool when the thermometer reading was 8°F. Like the Finns, he plunges into the swimming pool every day of the year.

Mrs. Stefan Ansbacher
Jocinah Farms
Marion, Indiana

The Double-Cross

Sirs:

I enjoyed your article "Living With Cross Compliance," in the Winter issue, but would like to ask—What cross compliance?

Timothy Blakely
Galesburg, Illinois

We advised you just to wait a minute if you didn't like it. As of mid-December all cross compliance regulations were completely washed out with the exception of the one section of the law that says that a farmer who violates his acreage allotments loses his eligibility for A.C.P. payments. You may disregard your allotment on corn, but still receive price support on your wheat, tobacco, etc., if you stay within your allotments on these crops. Or you may disregard your wheat allotment and get the support on corn if you keep your corn within the allotment. In other words, you may ignore controls on all crops except the one you plan to put under price supports.

In January Secretary Benson placed acreage allotments on rice and called for a referendum on marketing quotas on this crop, making it the last of the six "basic" commodities to come under the allotment program.

One Vote Against Controls

Sirs:

We are depending on grain farming for a living. The past two years our Durum wheat has been a failure due to rust: lots of straw, but no grain.

With Benson's farm plan we have no chance to make good our loss. Out of 600 acres of tillable land we are allowed only to plow 112 acres for wheat.

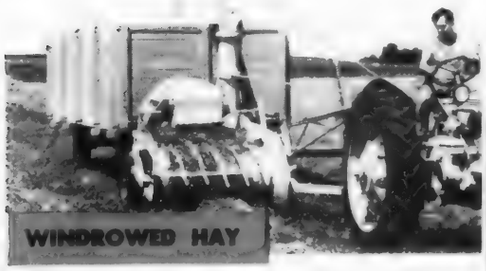
If in our place you would not waste any space in favor of Benson's farm plan.

Mrs. Lars Friestad
Buffalo, North Dakota

America's Lightest-Running Forage Chopper

Farmers generally comment on the light running of Quick-Change Case Forage Harvesters. They do fast work with 2 and 3-plow tractors, yet have capacity to use 4 and 5-plow power. The low-speed 6-knife wheel of the full-range-cut Model "220" saves power. So do the simple design, light weight, oil-bath gears and anti-friction bearings of all models, including the low-cost, 4-knife standard-cut "210." You save time, too, changing for different crops—one man makes change of attachments in a matter of minutes. Model "225" has its own engine; others drive by PTO. Hydraulic control available on all models.

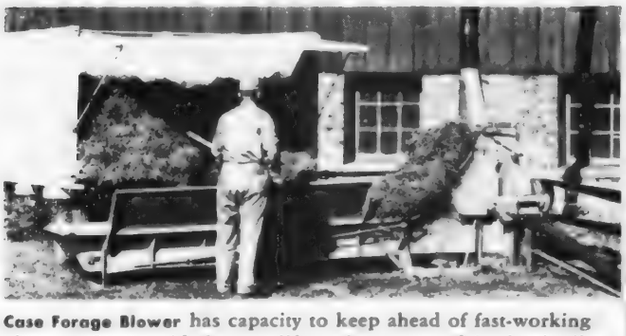
...with today's widest choice of attachments



Windrow pick-up gathers hay clean, handles it gently, saves leaves when crop is fully field-cured. Also handles hay half-cured for barn finishing, or wilted windrows with moisture reduced for silage.

Row-crop attachment cuts and chops heavy crops of standing corn, sorghum, etc. Surprisingly efficient in gathering and saving broken, wind-blown stalks. Special short-corn attachment available for low-growing row crops.

Draper-type cutter bar handles full-height hay for silage, as well as grass. Green-chop, 60-inch cutter bar, designed especially for fast work in grass, cuts wider, costs less.



Case Forage Blower has capacity to keep ahead of fast-working chopper. Long, wide hopper lifts to let wagons drive in. Available with apron-drive attachment for self-unloading wagons. Requires only moderate power for delivery to tall silos.

Case Income Payment Plan fits your farming system, lets you get money-making machines when you need them, pay when you have money coming in. See your Case dealer about it, and Case Forage machines.

MAIL FOR FORAGE FACTS

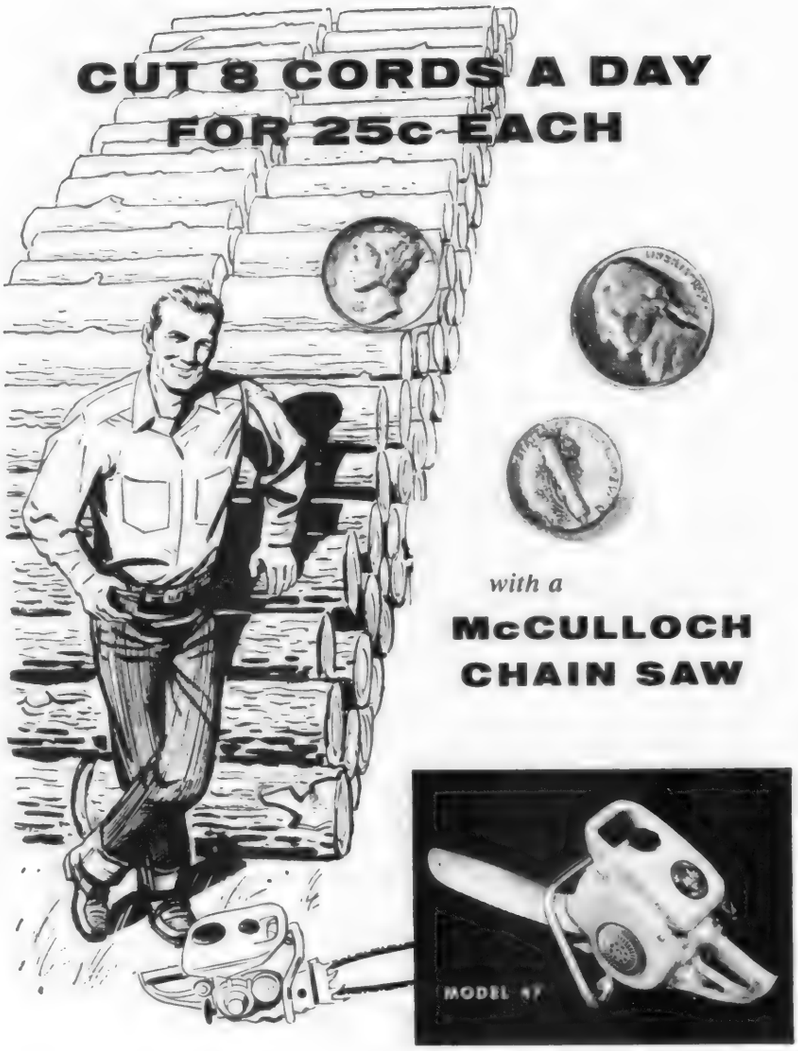
Check here or write in margin any kind of farm machine, any size tractor that may interest you. Address J. I. Case Co., Dept. C-905, Racine, Wis.

☐ Forage Chopper ☐ Forage Blower

Student?_____ I farm_____acres.

Name_____

Address_____



Six to eight cords is an average day's work with the easy-handling, fast-cutting McCulloch Model 47 chain saw. Based on 12 months' woodcutting (during one or more years), it costs under 25¢ a cord to get the speed and convenience of McCulloch gasoline-powered sawing. And that includes the price of the saw!

Gas and oil costs about 12¢ a cord; spark plugs, chain, and other upkeep cost about 1¢ a cord; depreciation on the saw would figure 10¢ per cord. Total—23¢ a cord.

Your farm woodlands can bring you steady income, with selective cutting using economical McCulloch chain saws.

There's a McCulloch dealer near you. He'll show you today's best bargains in chain saws. Models from $195 up, f.o.b. Los Angeles. Or write us for free literature and farm woodlands information.

McCULLOCH

McCulloch Motors Corp., Los Angeles 45, Calif.
World's largest builders of power chain saws

(5-4026)

NEW McCulloch is introducing a new type of lawn mower that's ideal for farm use. Watch for the McCulloch *twin-action* lawn mower.

Plants For Geiger Counters

Sirs:

In regard to your article on "Minerals Livestock Need," can you direct me to information as to what are the "certain species of loco and other plants" that are definite indicators of selenium?

W. R. Strieber

Chicago, Illinois

We understand that the following are pretty good indicators of selenium: Astragalus pattersoni; Astragalus ellisiae; Astragalus bisulcatus; Astragalus haydenianus; Aster venusta (woody aster); Grindelia squarrosa (gumweed); and Stanleya pinnata (prince's plume). Maybe it's simpler to use a Geiger counter.

Our Readers Are Sharp, We Always Say

Sirs:

We received our Winter number and wonder if the cover picture is backward. I thought it strange both men were left-handed. The ring looks like a wedding ring but is on the wrong hand. Then I looked for clues and found the jacket is buttoned right side over left; also the hammer strap on the overalls is on the right instead of the left leg. The other man has the plier pocket on the left instead of the right leg. We read more than the cover, though, and like it very much.

Fred J. Draper

Eldon, Iowa

Right you are, Mr. Draper. To provide space for our name on the cover and to improve composition we "flopped" the picture and right and left were reversed.

Burros By Mail

Sirs:

For some time I have wanted some Mexican burros and am now thinking of raising some. However, I know nothing about them and want all the information I can get. The whole country is beginning to wake up about them and I feel that this locale should be suitable for raising them.

Mrs. J. Degenhardt

Carleton, Florida

Spiegel, Inc., Chicago 9, Illinois, sells burros by mail. Also on sale by Spiegel are goats, dogs, monkeys, raccoons, skunks, hogs, and other live stock, poultry and birds.

THE FARM'S PICTURES

Cover by Fred Knoop

10—Ansbacher. 32—(top) Minneapolis-Moline, Fred Knoop. 33—J. C. Allen & Son. 34—Norton & Peel, Dewitt Walfe. 35—Caterpillar Tractor, Walter D. Hunicutt. 36—Bostwick, Grant Cannon. 37—J. C. Allen & Son. 38—Univ. of Wisconsin. 39—Fred Eichenberger. 40—Babson Bros. 41—Wyeth. 42—Fred Knoop. 43—R. J. McGinnis. 44 through 47—Joe Munroe. 48—Fred Knoop. 49—Library of Congress. 50—Joe Munroe. 51—Don F. Smith. 52 through 55—Joe Munroe. 56 and 57—J. C. Allen & Son. 58—(top) Joe Munroe, (bottom) J. C. Allen & Son. 59—Ag. Eng. Dept. Univ. of Wisconsin. 61—(left) Fred Knoop, (right) John Collier. 62—George Koshollek. 64—Joe Munroe. 65—Fred Eichenberger. 66—Grant Heilman. 67—(top) Standard Oil Co. (N.J.), Vachon; (bottom) Dupont. 68—Fred Knoop. 69—Drawing, Fred Eichenberger. 70—Fred Knoop, Oliver Corp., Tryco, Broussard's Studio, Pitts. Forging, Gandrud Corp., Associated Photographers. 71—Fred Knoop. 76—R. J. McGinnis. 78 and 79—Jesse Metzger. 79—(top) Joe Munroe. 94—Howard Lathrop.

FERGUSON DOES IT AGAIN!

1 QUADRAMATIC CONTROL is a new Ferguson exclusive that lets you raise and lower implements, select draft and maintain a uniform working depth, adjust the hydraulic system's speed of response, hold implements rigidly at desired position—all on the same quadrant, and with finger touch.

2 DUAL-RANGE TRANSMISSION provides wide range of speeds —6 forward, 2 reverse—to allow you to fit the speed *exactly* to the work, whether transplanting, spraying or doing close cultivation in the 35's "creeper" gear. Or plowing or discing in high-range first. Or driving along the highway at rapid transport speeds up to 14 mph.

3 NEW "2-STAGE" CLUTCHING controls *both* tractor transmission and PTO with a single pedal for operating such machines as the baler or forage harvester continuously, regardless of tractor starts and stops. Halfway down on pedal (you don't have to guess, you can *feel* it) disengages transmission *only* while PTO continues to operate. All the way down stops both transmission and PTO.

4 VARIABLE-DRIVE PTO is not just ordinary live power take-off. With the PTO shift you select either the drive that's in ratio to the *ground* speed of the tractor, for such jobs as raking, planting or fertilizing—or, the drive that's in ratio to *engine* speed, for harvesting, foraging, baling or other machine work, demanding continuous PTO operation.

NOW...ONLY THE GREAT NEW FERGUSON 35 GIVES YOU POSITIVE 4-WAY WORK CONTROL

Take a *good* look at the first and only tractor ever to outperform the famous Ferguson "30". It's the new Ferguson "35", and it *does* out-perform any tractor in its field!

It gives you far wider *range* of control, without ever leaving the new "Foam-Float" seat.

It gives you more selective control, to throw weight and power where you need it, to zoom through tough jobs and tight spots, with power to spare.

It gives you more benefits from the Ferguson System, which more closely than ever couples implement and tractor into *one* responsive, flexible unit.

But words are not enough. You must see and *feel* the features which make the Ferguson "35" the most versatile, working-est tractor you ever rode. Call your Ferguson Dealer. Arrange *now* for a demonstration!

PLUS many more features

Low rpm torque • Jumbo-size, 14" x 2" brakes • Both brake pedals same side • Increased engine power • Tractormeter • Recirculating Ball-Nut Steering • Compensating Overload Release • "Foam-Float" Seat • Safety Brake Latch • Also available, power spaced wheels

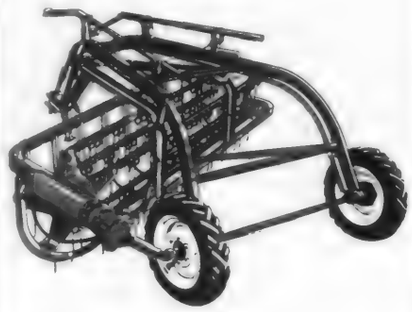
WIN
a new Ferguson "35"
FREE
Register with your Ferguson Dealer

Subject to Federal, State and Local Regulations

go years ahead / **GO FERGUSON**

Faster raking, richer feed

New Holland's new Rolabar Rake with *exclusive* 5-bar reel



A fast baler gives you richer feed by baling more hay just at the right stage of cure. But you lose the full advantage of this speed if you don't have a fast rake working with you.

The Rolabar has the speed you need and it's a leaf-saver, too. Even when the tractor is going 8 m.p.h., the 5-bar Rolabar reel just ticks over . . . handling hay gently, moving it from swath to windrow with half the forward motion of ordinary side rakes.

Result? You can build fluffy, quick-drying windrows faster than ever before without shattering the protein-bearing leaves and blossoms.

Power is by direct ground-drive—no chains or belts. Exclusive Pres-To Jack makes hook-up quick and easy. See your New Holland dealer for details on this fast, silent rake.

New Wide-Tread Farm Wagon

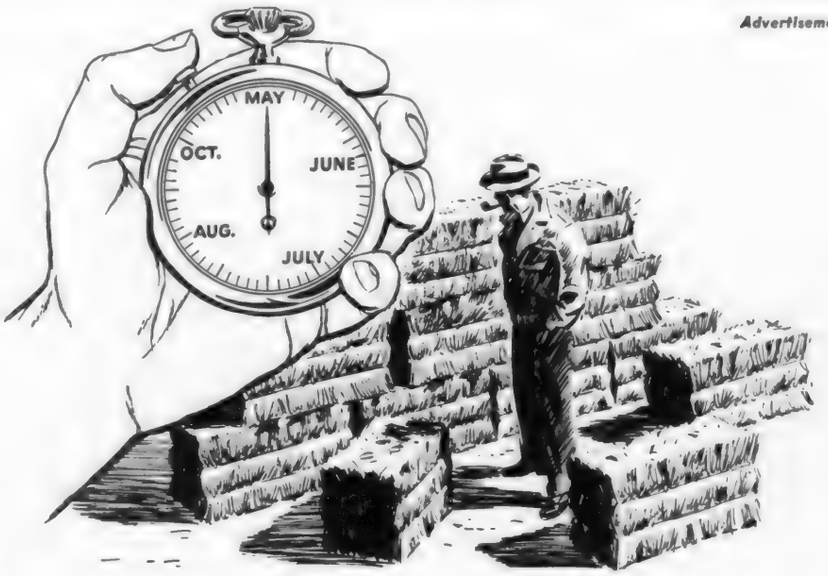
The wider tread of New Holland's new 5-ton farm wagon gives better balance, less chance of tilting. You can stack the load higher, carry more . . . smoothly and securely.

For your *Free* copy of a full-color catalog describing New Holland's high-capacity farm wagons, send in the coupon on the opposite page.

NEW HOLLAND

"First in Grassland Farming"

Advertisement



Timing Hay

Here's a plan that can help make the weather work *for* you, not *against* you! It's a plan that the Dairy Research Farm at Rutgers University has followed for twenty years.

Statistics for the last 75 years show you can expect about 9 days of spring rain if you farm in an area where haying starts around May.

If your hay happens to be down on one of these 9 days, you're out of luck. But suppose your hay isn't down. Your grass gets an extra boost of growth from that spring rain.

The problem is how to time your grass crops to give best use of sun *and* rain.

One answer is to cut your hayfields according to a pre-planned system of cutting times. Here's how.

Divide your hayfields into 5 sections. In each section plant different grasses and legumes so each section is ready for cutting at a different date. Result, you'll have 5 different cuttings each year, or a total of ten or fifteen if you harvest each section twice or three times.

Impossible, you say, especially when you hardly have time to take in two or three cuttings a year. Yet fifteen cuttings spread out from mid-May to late October makes a practical schedule.

First—It spreads out your harvesting schedule, but does not add extra hours to over-all harvesting time. No need to hire several men to rush in all your hay at once. It fits into your regular work schedule.

Second—Different grasses and legumes have different maturity dates. So if you use two fields instead of one and sow a different grass with a suitable legume in each field, you'll have two different haying times. Then, if rain falls on down-hay in one of your fields, the same rain gives a boost to the crops on your other fields.

See chart below for details of the plan followed by the Dairy Research Farm of Rutgers University in New Jersey. Dates shown are approximate for Middle Atlantic States and may vary in your area. See your County Agent for local mixtures and dates.

This article is condensed from a Grassland Handbook prepared by the New Holland Machine Co., New Holland, Pa.

HAYING HINTS

Dairy Research Farm Hay Harvest Plan

200 Acres

	1st Cutting	2nd Cutting	3rd Cutting
40 acres Orchard Grass Alfalfa	May 15	July 15	Aug. 25
60 acres Brome Grass Alfalfa	May 25	July 25	Aug. 30
10 acres Brome Ladino	June 6	Aug. 6	Oct. 10*
30 acres Reed Canary Grass Ladino	June 8	Aug. 8	Oct. 15*
40 acres Timothy Alfalfa	June 13	Aug. 12	Oct. 20*
20 acres Plowable			*or after killing frost
	30-day spread	28-day spread	55-day spread

One man can attach the new "Super 77" P.T.O. to a tractor in seconds. No tools needed.

New! The fastest P.T.O. baler you can buy!

It's the "Super 77" P.T.O.

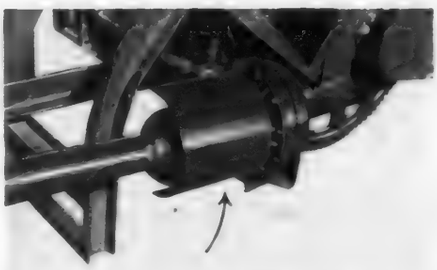
Gives 3-plow tractor owners full benefit of their available extra power! As easy to run as engine-powered balers!

With the new "Super 77" P.T.O., New Holland meets the demand for a power take-off baler that will team with 3-plow tractors for highest capacity . . . *up to 12 tons an hour!*

Free-floating pickup and adjustable wadboard give fast, positive feed to bale chamber. Anti-Clog knotters clean themselves, tie hundreds of bales without a miss. Bales are tied under compression for rough handling, easy feeding.

See your New Holland Dealer! He'll be glad to show you the new "Super 77" P.T.O. He sells a complete line of balers, twine- and wire-tie, all prices and capacities, so you can bring your haying problems to him with confidence.

New Holland Machine Co., subsidiary of The Sperry Corp.



You need no special skill to get maximum performance from the "Super 77" P.T.O. An overrunning clutch (gear box assembly shown above) lets you shift tractor gears effortlessly for steady, fast operation . . . high capacity.

If you prefer an engine-powered baler, you'll get top capacity from the field-proved "Super 77." Its 24-h.p. air-cooled engine—mounted high out of the dust area—has power reserves to handle heavy bunches without a falter . . . bale up to 12 tons an hour!

Don't gamble on twine!
New Holland Twine is certified by the U. S. Testing Co. for full length, quality, strength. Now at a new low price!

Free Catalogs! Check machine that interests you and send coupon to: New Holland Machine Co., 903 Elm St., New Holland, Pa.

☐ "Super 77" Balers ☐ Rolabar Rake ☐ Farm Wagon

Name_____

Address_____

Town_____ State_____

NEW HOLLAND

"First in Grassland Farming"

NEW HOLLAND, PA. • MINNEAPOLIS • DES MOINES • KANSAS CITY • COLUMBUS • CHARLOTTE • LOCKPORT, ILL. • BRANTFORD, ONTARIO

It has Grown to be a Great Name in America

1912 A small group of Illinois farmers organized the DeKalb County Soil Improvement Ass'n., . . . forerunner of today's DeKalb organization.

1925 C. L. Gunn began inbreeding corn to produce experimental hybrids. By 1934, Gunn's first varieties were ready for release. From this has been developed the most extensive corn breeding program known.

1944 DEKALB enters a NEW field of research. Tests indicated poultry could be improved using the same breeding principles so successful with corn. Under the guidance of Dr. E. E. Schnetzler, today's DEKALB CHIX are making new records on America's farms—year after year.

1946 Extensive research initiated on sorghums. NEW DEKALB experimental sorghum varieties are now out-yielding common varieties up to 50%. Still in various stages of testing, no seed is ready for sale.

Three of DEKALB's 6 CHIX Varieties—outstanding money-makers on thousands of farms year after year. Get the full story on DEKALB CHIX from your DEKALB Corn & Chix Dealer.

1954 DEKALB—already the leader in corn and poultry research, achieves its greatest accomplishment by introducing 25 NEW—DIFFERENT—BETTER varieties of DEKALB Seed Corn and 1 NEW—DIFFERENT DEKALB Chix Variety. This makes a total of 89 DeKalb corn and 6 DeKalb Chix varieties from which to choose.

DEKALB

For 15 Years More Farmers Have Planted DeKalb than Any Other Corn

DEKALB AGRICULTURAL ASSOCIATION, INC., DEKALB, ILLINOIS

Commercial Producers & Distributors of DeKalb Seed Corn & DeKalb Chix

Owners say: "More Economical, More Powerful, Easier to Handle"

Just "capped" a day's work

for my Massey-Harris

AND there you have it . . . dollars and cents economy! A full day's work on a single tank of fuel under normal conditions — one reason so many Massey-Harris owners have purchased their third, fourth, fifth Massey-Harris tractor.

There is no secret to this greater economy. It's Massey-Harris' Balanced Power Design . . . the perfect coordination — teamwork — between the units that develop the power and those that use it.

You know it's there the minute you put a Massey-Harris to work. You feel it in the way it cuts back and eases you through on light loads — then snaps into full power when the pull gets heavy.

It's the kind of power that likes to work, that takes the fight out of heavy jobs. Smooth, steady power . . . responsive . . . dependable, ready to go whenever you are.

And when you do take a Massey-Harris to the field, you'll be pleasantly surprised. It handles easier — turns, dodges quick . . . yet gives you a ride that is jar-and jolt-free . . . helps you do better work because you see what you're doing . . . leaves you feeling fresher at the end of the day.

The tools that team up with a Massey-Harris are easy to put on and take off . . . with the convenience and precision of its 3-point hitch and Depth-o-matic Hydraulic System that make tractor and implement an integral unit.

But you have to experience the performance of a Massey-Harris to know what a truly fine tractor it is. Arrange a demonstration with your Massey-Harris dealer. Drive a Massey-Harris and learn the difference in economy, power, ease of handling.

In a new booklet—"Out of the Mailbag" — farmers from all over the country tell of their preference for Massey-Harris tractors . . . the economy, power, ease of handling they get in a Massey-Harris. For your free copy write, Massey-Harris, Dept. C-222, Racine, Wisconsin.

1-2 plow Pacer

2-plow Colt

2-plow Mustang

3-plow 33

MAKE IT A

Massey-Harris

Outstanding for Economy, Power, Ease of Handling

4-5 plow 55

3-4 plow 44 Special

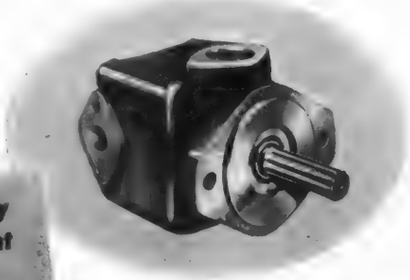
DETROIT PUBLIC LIBRARY

"Caterpillar" No. 41 Hydraulic Control imparts increased versatility to "Caterpillar" D2 and D4 Diesel Tractors. Here a D4 Tractor and tool bar with ditcher attachment is making irrigation ditches.

"CATERPILLAR" uses VICKERS HYDRAULIC PUMPS

"Caterpillar" selected the Vickers Pump (shown below) for the source of power in the No. 41 Hydraulic Control because of its outstanding performance . . . performance that results from several exclusive features. This Vickers Pump is vane type, hydraulically balanced and has automatic wear compensation. This means that it delivers more oil while taking less power from the engine . . . that it has a much longer life with minimum maintenance . . . and that it insures dependability and easier cold weather starting of the tractor. A Vickers Pump is the mark of high quality in hydraulic power controls.

This is the Vickers Pump used in the "Caterpillar" No. 41 Hydraulic Control. Hydraulic systems on tractors and other farm equipment use more Vickers Pumps than any other make.



People who look for quality in tractors and farm equipment also look for VICKERS.

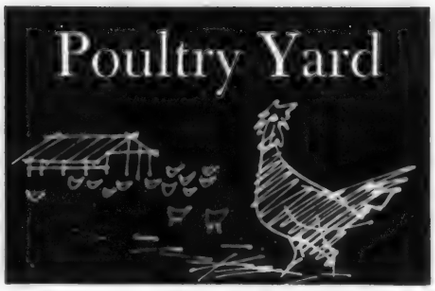
6321

VICKERS Incorporated • 1534 OAKMAN BLVD., DETROIT 32, MICH.

Application Engineering Offices: • ATLANTA • CHICAGO AREA (Brookfield) • CINCINNATI • CLEVELAND DETROIT • HOUSTON • LOS ANGELES AREA (El Segundo) • MINNEAPOLIS • NEW YORK AREA (Summit, N. J.) • PHILADELPHIA AREA (Media) • PITTSBURGH AREA (Mt. Lebanon) • ROCHESTER ROCKFORD • SAN FRANCISCO AREA (Berkeley) • SEATTLE • ST. LOUIS • TULSA • WASHINGTON WORCESTER

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

Poultry Yard



Silo Tester Chickens (culls we hope) are now being given the hazardous job of testing for dangerous gasses in silos. When a silo has been left closed with silage in it, lethal gasses form. Before entering such a silo, the farmer is advised to throw in a chicken; if she survives an hour of scratching around in the silage, it is safe to enter.

Beakless Broilers Broilers which have been debeaked as day-old birds make better gains and produce 11 per cent more Grade A birds. Reason: they can't be feather pickers without a beak to peck with.

Hot-house Hens We have learned that hens in cool houses eat more and lay better and we've learned to keep coops cool with ventilation, insulation, and even the use of sprinkler systems. Now the Poultry Department at the University of Georgia is trying to breed a heat-resistant hen. A flock of 500 hens is being housed in a coop which will be kept at a constant, sweltering 90 degrees. For the next three to five years selection will be made for breeding stock which show a tolerance for heat.

Efficient Feed for Laying Hens More eggs and greater body weight from less feed can be achieved with a new feed announced by the Storrs experiment station in Connecticut. The scientists have found that they can replace all of the oats and half of the wheat middlings used in the standard poultry ration with an equal weight of ground yellow corn and 20 grams of niacin per ton of corn. The replacement costs slightly more than the oats and middlings but increases efficiency of feed conversion enough to more than make up for the difference in cost. The new ration is also said to produce dryer litter.

Pasture for Turkeys One of the best pasture crops for turkeys, according to research workers in South Dakota, is rape, which is a cousin of both cabbage and turnip. Rich in vitamins A, C, and B_1 and in sulphur and protein, rape can be planted as early as oats, at the rate of five or six pounds to the acre, and will last until after the early fall frosts. It has both annual and biennial varieties and the seed is cheap. Turkeys love it and will pasture it down to the stump if overcrowded, but it makes a good recovery. Some farmers are seeding rape in the small grains and pasturing it after harvest.

Mail this Coupon

for Bigger & Better Crops in '55

TEST YOUR SOIL

Get up to 200 Bu. Corn per acre • 100 Bu. Wheat
30 Tons Tomatoes • 750 Bu. Potatoes
5 Tons Hay • Up to 300% Increase in Milk

If desired, use our Easy-Payment Plan (see coupon)

Make More Money in Spite of Lower Prices!

Fields full of healthy, vigorous crops are a beautiful, satisfying sight to any farmer. They are proof of a job well done! Whether you farm 10 acres or 1,000, Soil Tests will make every acre a record breaker. You'll have yields of better quality, at lower cost. Every field you test can bring you as much as $500 or more in extra profit — at the same time you're building up your land instead of wearing it out.

Save Up to $15 an Acre on Fertilizer

Besides getting bigger yields you'll save money on fertilizer — use only what your soil needs. Guessing costs plenty — wastes both time and money. A Pennsylvania farmer was going to spend $700 for lime but not a single field needed any; some already had too much. He not only saved $700, he got better crops without it.

You can't afford to buy fertilizer and not know it's what your soil needs. Soil testing makes it a sure investment. You'll get back up to $10 or more in extra yield for every dollar's worth of fertilizer, like the Ohio farmer who boosted corn yields 300%, oats 500%, wheat 100%, hay 300%, with his Sudbury Soil Test Kit.

Farmers deLuxe Soil Test Kit

So simple anyone can use it! So reliable that county agents, ag. colleges, extension workers and progressive farmers everywhere depend on it. Complete with everything for hundreds of tests. More valuable than all your stock and tools! Shows right amounts of nitrogen, phosphate and potash for each field. Also whether lime is needed (pH) and how much. Lifetime welded steel chest with carrying handle. Easy instructions show needs of 225 different crops. Ready to use anywhere, anytime, even out in the field. No delays waiting for reports — the answer is printed right on the chart. Stop guessing — order today. **Big Value, only $29.95.**

No Knowledge of Chemistry Needed

Easy as Reading a Thermometer

Even your first tests will be accurate and reliable. Takes only 10 minutes, costs less than 10c a test! The Dept. of Agriculture approves of Soil Test Kits for farmers.

You Can Be Wrong — Soil Tests Never Are!

No Fertilizer | Lacked Phosphate | Needed Potash | Fertilized Correctly

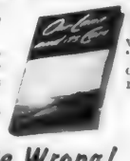
The right fertilizer, guided by soil tests produced the bumper corn yield in the bin at right, above.

These wheat tests by a leading ag. college show yield increased ten-fold with proper fertilizer. See the vigorous root system as well as heavy top growth of plant at right. Even when only phosphate or potash was lacking, yield dropped as much as 40%.

Better Crops Guarantee

You take no risk—even next fall if you didn't have bigger, better crops after using your Soil Test Kit this spring and summer, send it back and we'll return your money — our Daring Guarantee!

SEND NO MONEY —We'll mail C.O.D. plus postage. Or send check and we'll pay postage, saving you from $1.91 to $3.55 in postal charges.



FREE BOOK —If you send check, we'll also include 'Our Land and Its Care,' valuable book on farm management. If not delighted with your Soil Test Kit, return it in 10 days for full refund.

Money-Back Guarantee

FREE TRIAL

425,000 Users Can't Be Wrong!

S.H. of Michigan "guessed" his potato field had enough potash but needed nitrogen. Tests showed he was wrong. He used potash and doubled his yield!

R.S.G. of Indiana tested his soil and has reduced fertilizer costs by using only what his Sudbury Soil Test Kit showed was needed.

A.D. of Indiana nearly doubled his corn yield after testing his soil.

A.F.B. of Iowa increased his bean yield 50% by correcting phosphate and potash deficiencies his Sudbury Soil Test Kit revealed.

W.L.D. of Pennsylvania saved $400 on fertilizer. "The Kit has paid for itself over and over again."

G.H., Ohio "Have made many tests; like its simplicity and accuracy. Worth 1000 times its cost on my 320 acres."

Dealers: Write for Special Offer

SUDBURY LABORATORY, Box 747, South Sudbury, Mass.

World's largest makers of Soil Test Kits

SUDBURY LABORATORY, Box 747, South Sudbury, Mass.

Send me the Farmers deLuxe Sudbury Soil Test Kit at the special low price marked below:

☐ Enclosed is $29.95; send postpaid; include free book, "Our Land and Its Care."

☐ Send C.O.D. plus postage.

Name _____

R.D. or St. _____

P.O. _____ Zone _____ State _____

☐ Send on Easy-Payment Plan — I'll pay mailman $4.95 plus postage, then 4 monthly payments of $6.75 each.

"EATON 2-SPEED AXLE GIVES ME

MORE PULL OFF THE ROAD
MORE 'GO' ON THE ROAD"

...says Ralph Tugend, owner of Mar-Lew Farms, Jeromesville, Ohio.

"SOFT AND SLIPPERY" describes the ground conditions. But with the low-gear range, Mr. Tugend's Eaton-equipped International pulls out smoothly—no spinning, bucking or stalling.

"HUSTLE ON THE HIGHWAY—that's for *sure* with Eaton's high-range gears," Mr. Tugend says. "We've got the speed to get our products to market in minimum time... saves wear and tear on the engine, too."

"On our 380-acre farm, our International truck does work with a capital 'W'—work that we never thought a truck could do," Mr. Tugend says. "We have lots of tough off-the-road jobs that would bog down an ordinary truck, but the Eaton 2-Speed Axle gives us the all-'round pulling power we need to master any farm hauling job. With the low-range gears, we drive right into the fields, take on an extra-heavy load and move right out through mud and rough ground—and that's without bucking or frogging.

"When we go to market, we get some good stretches of highway under our tires—that's when the Eaton 2-Speed's high-gear range pays off. Even with a full payload, we step right along at legal speeds. We don't have to push the engine because we make better speed with lower engine r.p.m. In four years' experience with an Eaton 2-Speed, we've realized a saving in time, gasoline and maintenance costs. We figure the Eaton has paid for itself at least a couple of times over." Before you buy a truck, ask your dealer to demonstrate all the advantages of an Eaton 2-Speed Axle. He'll show you how it saves time, trouble and dollars.

"OVER 90 PER CENT OF OUR FARM CUSTOMERS WANT EATONS in their new trucks," states G. E. Seaboyer of Ashland Truck & Implement Co., Inc., International Dealers, Ashland, Ohio. "From years of experience, they know that Eaton 2-Speeds make hauling easier and cheaper."

MORE THAN 2 MILLION
EATON AXLES IN TRUCKS TODAY

EATON

EATON MANUFACTURING COMPANY, CLEVELAND, OHIO

2-SPEED *Truck* AXLES

PROJECT PAR
ADEQUATE ROADS: America's crowded roads boost the cost of marketing your farm products. Support the better-roads program in your state.

"Our Steel Building is one of our best investments"

says Harold Schoeman, Cedar Falls, Iowa

IN NOVEMBER of 1953, during a very dry season, Mr. Schoeman lost one of his large barns in a costly fire. "When our barn burned to the ground," says Mr. Schoeman, "we realized that a wooden structure is a handicap and very dangerous to other buildings in such a disaster. Having a large herd of purebred Guernseys to shelter, we immediately planned to replace the lost building."

After considering the low cost of steel and the low maintenance on it, Mr. Schoeman decided to buy and erect a 36′ x 172′ clear span utility type Steel building. The major part of the building houses his Guernseys and the remaining space is used for storing machinery, fertilizer and feed. "We are now convinced," Mr. Schoeman says, "that it is one of our best investments."

For dairy cattle housing, machinery and other storage, Steel buildings are ideal. They give maximum, unbroken floor area —allow the free movement of livestock or machinery with no posts to get in the way. Weather-tight Steel buildings are also excellent for hay and grain storage or as versatile all-purpose structures. You'll save on erection costs and upkeep when you invest in a Factory-Built Steel Farm Building manufactured with long-lasting USS Galvanized Steel Sheets for roof and walls, and a USS Structural Steel framework.

When buying a Factory-Built Steel Farm Building, ask for USS Galvanized Steel Sheets for roof and sides. These sheets have a zinc coating produced to ASTM Specification A-361. This is your assurance of a high quality building.

USS

SEND THIS COUPON FOR FURTHER INFORMATION

Agricultural Extension Section, United States Steel Corporation
Room 4599, 525 William Penn Place, Pittsburgh 30, Pa.

I am interested in steel buildings for the following:

☐ machinery storage ☐ cattle shelters ☐ grain storage ☐ poultry houses
☐ dairy barns ☐ hay storage ☐ other .....

Approximate size or capacity .....

☐ **Please have a Steel Building representative call on me with further information.**

Send information to:

Name .....

Address ..... **Town** .....

County ..... **State** .....

United States Steel Corporation produces high-quality USS Galvanized Sheets and Structural Steel which our customers manufacture into durable farm buildings. Your requests for information will be forwarded to the manufacturers of these buildings, and you will hear directly from them.

UNITED STATES STEEL

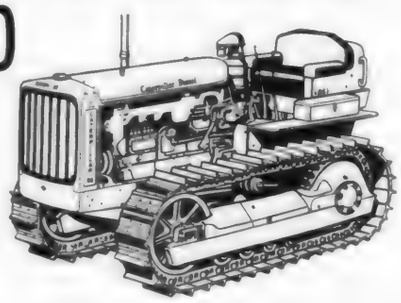
NEW HORSEPOWER
WORK CAPACITY

to help you do more for less!

NOW at your Caterpillar Dealers: the most modern, powerful line-up of heavy-duty farm tractors in Caterpillar history! More power and speed to help you cover more acres . . . pull or push bigger loads faster . . . farm more land easier. See your dealer today . . . **NAME THE DATE . . . HE'LL DEMONSTRATE** the size to fit your needs!

NEW

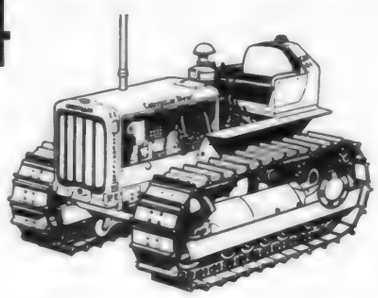
D6 75 DRAWBAR HP



Pull 8-10 bottoms in average soil. Have abundant power to clear land — build ponds, dams, roads — earn extra money. Make your labor about 5 times as productive as it is with a 2-3-plow wheel tractor. **NEW: Exclusive Caterpillar oil clutch for trouble-free service.**

NEW

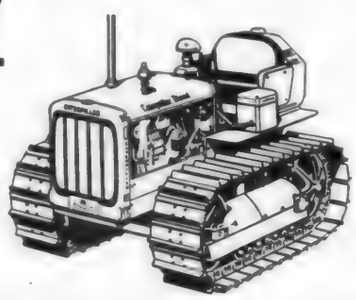
D4 48 DRAWBAR HP



Overall performance equal to twice the work of ordinary 3-plow wheel tractors. Handle seven bottoms in average soil. Ideal for the medium-to-large farm. **NEW: Direct-electric starting system optional to the independent gasoline starting engine now available.**

NEW

D2 38 DRAWBAR HP



Pull five bottoms in ordinary soil . . . accomplish up to 60% more in soil fitting than the ordinary 3-plow wheel-type tractor. Handle many extra jobs and save on equipment costs by using integral CAT* Tool Bar Equipment and companion tools.

CATERPILLAR TRACTOR CO., Peoria, Illinois, U.S.A.

CATERPILLAR* **FIRST IN TRACK-TYPE TRACTORS**
FIRST IN DIESEL POWER

*Both Cat and Caterpillar are registered trademarks — R

SEND COUPON TODAY! **Caterpillar Tractor Co. Peoria, Illinois Dept. FQ35**

FREE BOOKLETS

Send me the following booklets:

- ☐ "Earn and Save More With Tracks and Diesel."
- ☐ "Power Farming."
- ☐ "Profitable Custom Work."
- ☐ "Earthmoving on Farm and Ranch."

I farm_____acres. ☐ Check here if student.

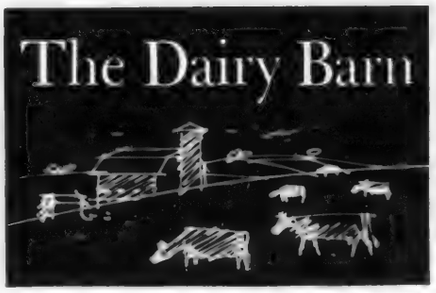
*Name*_____ *Phone No.*_____

PLEASE PRINT

*Address*_____

*City*_____

*State*_____



More Mileage from Milking Inflations

Synthetics win again. At least that is what the results of some recently concluded tests in New York State would seem to indicate. There it was found that neoprene milking machine inflations will last twice as long as those made of natural rubber. Not only will they last longer but they will provide better sanitation, too. Neoprene has greater resistance to the destructive action of butterfat, heat and chemicals.

To compare the efficiency of neoprene inflations with those of natural rubber, Dr. J. C. White, professor of dairy science at Cornell and G. R. Folds, Eastern Dairy Products Corporation, enlisted the cooperation of eight farms with a total of 25 milking units. Two standard, commercially available neoprene inflations and two natural rubber inflations were put on each of these machines and the dairymen were told to treat all the inflations exactly as they treated their own, to make replacements just as they would under ordinary circumstances. The test was conducted over a one year period.

Thirty-three of the natural rubber inflations wore out during the year, one of the neoprene inflations.

Chief reason for the better performance of the neoprene seems to be that the natural rubber absorbs much more fat, increasing the inflation's weight and causing distortion which in turn changes the volume of the cup and brings about a decline in milking efficiency. Inflations that had been used 170 days were tested for volume and weight increase. A number of rubber inflations showed volume increases of more than 35 milliliters compared with an average increase in volume of only 1.5 milliliters for the neoprene. In weight, the rubber inflations increased upwards of 15 grams compared with an average of 2.1 grams for neoprene.

According to Dr. White, the tests also revealed that "neoprene is usually more effectively cleaned and sterilized than natural rubber under the same conditions." Swab tests revealed about twice as many colonies of bacteria on the natural rubber inflations as were found on neoprene.

Down at the Virginia Polytechnic Institute they have found that a set of rubber parts that looks clean will sometimes release enough butterfat to make a small cake of soap. The solution offered to the problem is to boil all the rubber parts of the milking machine in a strong lye solution for 15 minutes every week.

it's Automatic

SELF PROPELLED IRRIGATION

For the first time in Agricultural history irrigation is **EASY!**

5 big advantages

You Irrigate Faster	As an example, you can give a forty-acre field a one inch rain in less than 30 hours. The Self Propelled system will operate, unattended, night and day.
You Need Far Less Labor	Just turn it on. The unit does the rest under automatic control—a great savings in time and labor. All you do is check it occasionally. You move no pipes—a back breaking job in mud.
Irrigate Land That's Too Expensive to Flood Irrigate	A Self Propelled System will operate over gradually rolling land where leveling, ditching, etc., are too expensive.
Effectively Irrigate High Crops	Corn, sorgum, etc., can be irrigated by the Self Propelled System that goes right over the top of them.
Economical	Drastically reduced labor cost plus ability to do more acreage in less time makes it possible for a Self Propelled Sprinkler Irrigation System to pay for itself in large annual savings that go on year after year.

Guarantee Your Crops Every Year

VALLEY

Manufacturing Co.

Valley, Nebraska

***At a single setting,* sprinkler-irrigate up to 160 acres of gradually rolling or level land with practically no labor cost.**

You can now sprinkler-irrigate up to 160 acres at a time without moving a single pipe, and you do it faster. For example, a forty acre field can be given a one-inch rainfall in less than 30 hours.

In simple terms the sprinkler pipe is mounted on wheels that are propelled by water power. Using the hydraulic principle, normal water pressure of 40-50 pounds is converted to a 3,000-pound force and applied to driving wheels which move the system in a circle slowly around the field. (see diagram) Tremendous power plus traction lugs on the wheels allows you to irrigate gradually rolling land and row crops.

A special gun-type nozzle on the extreme end irrigates the corners of the field. Because the unit tracks perfectly on each round, crop damage is much less than 1 percent. The pipe is high enough so that it passes over the top of high crops such as corn, etc. A master valve allows you to regulate the rainfall.

Systems of any size up to a 160-acre field system are available. Smaller systems designed to irrigate, for example, a 40-acre field at a single setting are highly portable and can be quickly moved from one field to another. In this way a total of 200 acres can be irrigated effectively.

Get the full facts about this amazing new system

Valley Manufacturing Company Dept. D Valley, Nebraska

Send me full information on Self Propelled Sprinkler Irrigation

Name_____

Address_____

THE OLD, COSTLY WAY
50 acres seeded the usual way takes
750 lbs. Orchard Grass @ .45 $337.50
500 lbs. Lespedeza @ .35 175.00
Total Cost $512.50
THE BRILLION WAY
50 acres seeded with a Brillion Sure-Stand takes less than
375 lbs. Orchard Grass @ .45 $168.75
250 lbs. Lespedeza @ .35 87.50
Total Cost $256.25
Saved by a Brillion $256.25

Brillion Sure-Stand Seeders

CUT YOUR COSTS 50%

...take the worry out of high seed prices

YOU can cut seed costs 50% over drilling and broadcasting with a Sure-Stand Seeder — savings that actually pay for the Brillion in only a few days' use.

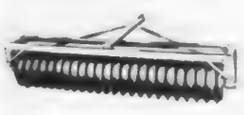
The Sure-Stand does it with "Controlled-depth" seeding. Every seed is sown within the top ½-inch of soil — close to moisture and nutrients. It germinates fast — grows strong, sturdy, in a firmed seedbed with all clods crushed to unlock the plant food they contain.

This combination of accurate seed placement and a well-mulched seedbed assures a positive catch on less seed. You eliminate the waste of seed planted too deeply or seed sown to a lumpy seedbed filled with air pockets. As a result, you can safely plant fewer pounds per acre and get equal or bigger yields . . . in wet or dry seasons, on heavy or sandy soil.

Your Brillion dealer will be glad to give you complete details on the Sure-Stand's "Controlled-depth" principle. Ask about its utility as a pulverizer too. For folder write your name and address on the margin and mail the coupon below. Brillion Iron Works, Dept. SG-3-3, Brillion, Wisconsin.

Brillion
SURE-STAND GRASS SEEDERS
5'4" and 8' models

IF BRILLION MAKES IT, IT MUST BE GOOD



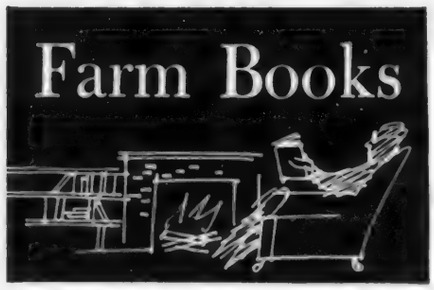
BRILLION PULVERIZERS have the weight, strength, and flexibility for tough soils and uneven conditions. Dust sealed roller bearings for fast tractor speeds. Sizes and types to suit all operations.

BRILLION PULVI-MULCHERS crush both surface and buried lumps in one trip. Completely prepare seedbed for planting. Dust sealed roller bearings. 6-, 7-, 8-, 9-, and 10-foot.

BRILLION ROTARY HOES cut the cost of early cultivations . . . break crusted soils. Exclusive "work-all" wheels. 2-, 3-, 4-, and 6-section sizes — special 2-section pick-up model.

Send me complete information on the Brillion Implements I've checked below.

☐ Sure-Stand Seeder ☐ Pulverizers ☐ Pulvi-Mulchers ☐ Rotary Hoes



***From Missouri,** by Thad Snow, Houghton Mifflin Company, Boston, $4.00.*

Thad Snow is a farmer who has lived more years than most of us expect to live. He will be 74 this year, but he has lived with such zest that he seems to have crowded in more work and understanding, humor and tolerance, and pleasure, thinking and stark tragedy than seems possible in just 74 years. The tragedies that have rocked his life he does not mention in this book. The rest of his life he discusses in a rambling, humorous, and thoughtful fashion.

Snow's first farming was practically a prescription from his doctor. His health had broken in his last year of college and farming was to be his cure. The cure was to last until today for, as he says, "Before the first year had passed, the idea completely left my head that I was just farming myself out temporarily to get enough health and strength to do something else. I was a farmer for life, and I knew it. Others, especially my parents, were not so sure, so soon. But it wasn't long 'til everybody knew it because I began to do things that made sense: that is to say, I began to make money. . . ." He continued to be a successful farmer in Indiana, raising some of the first alfalfa, setting farrowing and pig-saved records, learning to rotate sheep on different pastures to avoid disease.

From the time he was 20 until he was 29, Snow continued to be a prosperous Indiana farmer. Then he was struck by the urge to move, to be a pioneer. He pulled up stakes and landed on a thousand-acre tract in the delta region of Missouri—the flat, tree-covered, poorly-drained land bordering the Mississippi for which he coined the name Swampeast Missouri. Here, through the eyes of a Hoosier and the curious detachment which was his birthright, he was able to observe as well as participate in his own and neighbors' struggle with the land, the floods, and the social problems of a cotton farming group.

A book of reminiscences often leaves you with the feeling that you have discovered a new friend. Thad Snow not only becomes your friend but shares with you all of his cronies. One of these is the whimsical poet who, though a grown man, and a well-known one, could still go fishing with a 15-year-old boy and share with him his humor and humanity. This poet, James Whitcomb Riley, is in no danger of being forgotten, but Snow has preserved a human, ribald side of him that is little known to most Americans. He has also

(*Continued on page* 136)

Call your veterinarian early...

Save his time...save your livestock

CONSTANT RESEARCH
Squibb scientists are constantly seeking and discovering new and better drugs...to aid your veterinarian in bringing better health to your livestock.

More livestock on farms today, with increased demands for higher production per animal, means this: Your veterinarian has a gigantic task. He must serve more farm animals, and more valuable animals, than ever before.

But when your veterinarian is needed for diagnosis or treatment—don't wait until the last minute. *Call him promptly!*

An early call helps catch trouble at the start ...helps prevent complications...keeps production losses at a minimum.

It may reduce the number of visits required by your veterinarian...save his time... save you money...and help you save a valuable animal!

Fortunately today your veterinarian has many potent drugs to help speed your animals on the road to recovery.

Among these, Squibb veterinary drugs are widely recognized for their reliability, efficacy and uniformity.

Modern veterinary science, utilizing present-day drugs, can do much to bolster your breeding, care and management in making your livestock more profitable. But be sure to call your veterinarian early. Tomorrow may be too late!

SQUIBB
Veterinary Department
745 Fifth Avenue, New York 22, N. Y.

For prompt, accurate diagnosis, always consult your veterinarian.

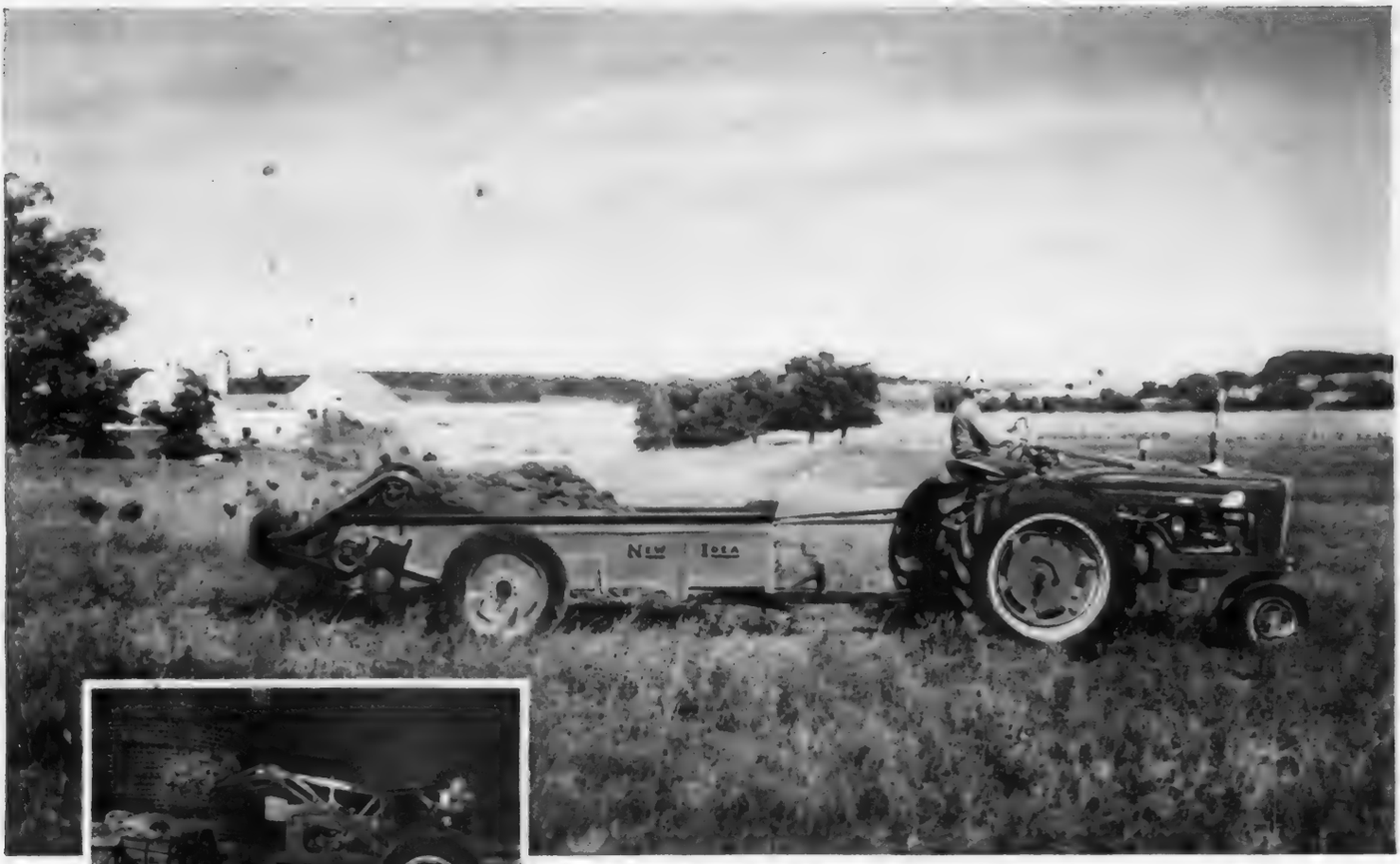
SQUIBB—A NAME YOU CAN TRUST

HERE'S THE NEW 95 BU. NO. 17 — another star in the famous New Idea family. Largest capacity ground-driven spreader built. Designed for today's mechanical loading. Stronger slanted arch let's you place bigger loads closer to the cylinders. Heavy-duty U-shaped channel hitch. Full-length steel flares; steel endgate; gusset plate frame-to-box reinforcement; penta-treated long leaf yellow pine box. Teams up perfectly with New Idea-Horn "50" loader with its 2,500 lb. breakaway power.

You get all the soil can

GOLIATH OF THE NEW IDEA SPREADER LINE, the 120 bu. No. 15 PTO spreader gives you the capacity, power, and speed to spread hard-packed, power-loaded manure fast and efficiently. Turns the problem of almost daily barn cleaning into an opportunity for top profits from well-fed soil. You spread any time you can get your tractor into the field. 4 rates of speed for every forward gear of your tractor.

BUILT TO GIVE AND TAKE A BEATING. New Idea stalk and vine shredder pulverizes crop residues for quick return of humus and plant food. To suck material into hammers, right and center hammer shafts turn clockwise. Hammers have wax-impregnated rubber bushings.



YOU'VE NEVER SEEN SUCH SPREADING! Bigger diameter upper cylinder chews up loads you'd swear would choke the machine. Larger loads feed smoothly through low, angled arch without plugging. Pressed fiber bushings wear longer, take less servicing. Distributor paddles attach individually, easily. Sprockets and chain tighteners are stronger—adjustments easier. Main cylinder shaft is 1¼" in diameter with extra large bearings. *At left:* "50 C-V" loader for conversion tractors.

yield.... with New Idea

THE NEW IDEA fertilizer spreader applies fertilizer accurately, uniformly, regardless of condition. Sows fibrous grains and grass seed through main box; grains, grasses, and legumes through easily attached seeder. 5', 8', 10' and 12' models; tractor-mounted side-dressers for Ford or Ferguson tractors.

Men who understand and love the soil use New Idea soil-building tools for three important reasons:

1. *They load, carry, break up, and apply plant foods in the easiest, fastest, most accurate way known to assure top yields.*
2. *They are rugged and long lasting — able to perform with new machine efficiency long after they have paid for themselves.*
3. *They turn out the best job with the least work — whether handling manure, spreading fertilizer or shredding crop residue.*

There is no room on farms today for management that wastes manure and chemical fertilizer dollars. Give your community New Idea dealer a chance to explain why investing in New Idea is a good idea. He's the man to help you explore the details!

NEW IDEA

FARM EQUIPMENT COMPANY AVCO

Dept. 1539, Coldwater, Ohio

Mail coupon for detailed, illustrated literature.

- ☐ No. 17, 95 bu. spreader
- ☐ No. 15, 120 bu. PTO spreader
- ☐ No. 12-A, 90 bu. spreader
- ☐ No. 14A, 65 bu. spreader
- ☐ No. 10A, 75 bu. tractor or horse-drawn spreader
- ☐ No. 61 stalk and vine shredder
- ☐ Fertilizer spreaders
- ☐ Hydraulic loaders

Name_____

Address_____

Kelsey-Hayes wheels on the farm

As mechanization has supplanted animal power on the farm, the past half-century has witnessed the growth of agricultural America to the world's most productive and prosperous farming nation.

Kelsey-Hayes is proud of the role it's played in this progress. Since 1888, our French & Hecht Farm Implement Division at Davenport, Iowa has been solely devoted to the making of wheels and vital parts for the machinery and implements of agriculture. ***Kelsey-Hayes Wheel Co., Detroit 32, Mich.***

KELSEY HAYES

World's Largest Producer of Automotive Wheels

Wheels, Brakes, Brake Drums, Special Parts for all Industry • 9 Plants — Detroit and Jackson, Mich.... McKeesport, Pa....Los Angeles...Windsor, Ont., Canada...Davenport, Ia. (French & Hecht Farm Implement and Wheel Div.).

Another durable farm building

of West Coast Lumber!

The nation's countryside is dotted with durable, long-lasting farm buildings of wood. Types of farm buildings change as new farming methods are developed, but one thing holds true... there is no substitute for versatile, easy-to-use lumber. Today's new farm buildings, as for generations past, are being built of wood—America's favorite building material.

When you build, ask your dealer for West Coast lumber, long known for its many outstanding qualities. Ask for these species by name... Douglas Fir, West Coast Hemlock, Western Red Cedar and Sitka Spruce.

SEND COUPON FOR FREE BOOKLETS: "Planning a Farm Home" outlines new, practical method of planning. "How to Build Farm Buildings That Last Longer" demonstrates proved construction methods. Pocket size. "Horizontal Surface Silos" shows construction sketches for new type silo.

Start Your New Home Now

WEST COAST LUMBER

Lumber of Quality Produced by Members,
WEST COAST LUMBERMEN'S ASSOCIATION

Douglas Fir
West Coast Hemlock
Western Red Cedar
Sitka Spruce

WEST COAST LUMBERMEN'S ASSOCIATION
1410 S. W. Morrison, Room 820, Portland 5, Oregon

Please send me your free booklet(s)

☐ Planning a Farm Home ☐ Douglas Fir Surface Silos
☐ How to Build Farm Buildings That Last Longer

Name_____

Address_____

City_____ Zone_____ State_____

Coupon may be pasted on postcard

Having trouble with Mastitis?

Blast it with the new "4-Barrelled"

TARGOT* ANTIBIOTIC OINTMENT

At the first sign of bloody, lumpy or stringy milk on your strip cup screen, infuse the infected quarter with TARGOT. Mastitis is caused by many kinds of bacteria and TARGOT combines *four* powerful antibiotics—for a smashing, "4-barrelled" attack on *all* mastitis-causing bacteria. The lighter-than-milk base results in a faster contact of TARGOT with udder tissue for quick, effective treatment. The tissue is saved and the udder speedily returned to normal.

TARGOT coats udder tissue, does not remain suspended in the milk and so is not withdrawn and lost when the quarter is milked. Available from your veterinarian, druggist or feed dealer.

Write for free literature.

*Trade-Mark
†Chlortetracycline

TARGOT COMBINES 4 POWERFUL ANTIBIOTICS:

Lederle

LEDERLE LABORATORIES DIVISION

AMERICAN Cyanamid COMPANY

PEARL RIVER, NEW YORK

Breathe easy
AT HAYTIME

SAVING ONE GOOD CROP
CAN PAY FOR YOUR OWN
ROTO-BALER... $1165 f.o.b. factory

Fifty tons of choice green hay saved from rain spoilage can more than pay for your own ROTO-BALER. It's a million-dollar feeling to know that the well-being of your herd is assured by nutrition-packed feed, safe and dry in round bales.

Rain-resistant round bales shed water like a thatched roof—defend the hay inside against spoilage!

They are easy to handle with loader, elevator or hayfork. Round bales can't buckle or burst open. There's no wire to endanger livestock.

Round bales can be self-fed whole if you like. Livestock help themselves—eat the curving, leafy layers without waste.

Catch your hay at its early-blossom best. Beat the weather. Bale fast . . . take a *double* windrow.

With a "home-owned" ROTO-BALER, you're always "ready to roll." You can breathe easy—good weather or bad!

Round bales "breathe"

New soft-center attachment—now regular equipment—forms a center core of loose hay for better aeration and faster curing . . . automatically increases density in outer bale layers for better weather-proofing and desired bale weight. Available for ROTO-BALERS now in service. See it at your dealer's now.

ROTO-BALER is an Allis-Chalmers trademark. Price includes PTO attachment.

ALLIS-CHALMERS
TRACTOR DIVISION MILWAUKEE 1, U. S. A.

The forage harvester has been the greatest labor-saver to hit the hay fields in recent years. This Minneapolis-Moline Uni-Forager picking up forage from the windrow is one of a number of harvesting implements designed to be used with M-M's Uni-Farmor.

NEW MACHINES THAT SPEED-UP SILAGE AND HAY MAKING

The Owatonna Windrower is self-propelled. It cuts the forage and without running over it, lays it down in a windrow for pickup by chopper or baler.

New Ideas in GRASS SILAGE

By Charles R. Koch

WHEN the fields begin to green up in the Spring, the farmer has his annual attack of wishing fever. "I wish I could have grass like that all year 'round." So he begins to think about ways to save it. His past experience with hay very likely leads him smack up against a stone wall when he starts thinking in that direction; then he comes around to thoughts of grass silage and he winds up with more questions than he has the answers for. Here are some of those answers.

The obvious question at the top of the list is how good is grass silage? The answer is that when it is good, it is hard to beat; when it is poor, its value ranges on down the scale to zero. But good grass silage, which usually implies a mixture of grasses and legumes, is a feed so nutritious that scores of dairymen like Wisconsin's Clarence Draeger are finding they can cut their protein supplement purchases to zero with a ration of grass silage, high quality hay, and home grown grains. Beef feeders and sheepmen, too, who have tried the stuff have come to the conclusion there is no sense in letting the lush growth of spring and early summer go to waste when it can be put in a silo and fed out later in the year when pastures are short or barren.

While yields of total digestible nutrients per acre are lower with grass silage than with corn silage, the grass product when well made is two to three times richer in protein. Harold Alley, procurement manager for a large dairy at Peoria, Ill., took samples of grass silage last fall that had been put up by a number of the dairy's milk suppliers. Most of these samples showed a protein content of upwards of 14 per cent on a dry matter basis; one hit 16.3 per cent.

To tie this protein production to an acreage basis, the men who operate the calculating machines at the Illinois experiment station have come up wth the following interesting comparison on the production of digestible protein per acre by various kinds of silage:

Corn silage	220 pounds
Alfalfa silage	510 pounds
Red clover silage	250 pounds
Sweet clover silage	300 pounds

Each of the legumes beat the corn silage by anywhere from a fair to a whopping big margin.

So, you say, that sounds good, but what about that well known proof in the eating. In other words, what about the palatability of grass silage. Will stock eat it? Ultimately, that is a question on which every farmer has to satisfy himself. One can always turn up a witness who might testify that he put the most beautiful looking silage in the world before his cows—and they walked away from it. But men who are feeding it tell of the relish with which their stock clean it up and the statistics showing almost a ten-fold increase in grass silage production in as many years are a pretty solid argument in support of its acceptance by beast as well as by man. The farmers who put up those millions of tons of heavy green grass didn't go through the motions for the exercise.

Then there is that real clincher that the grass silage enthusiast never overlooks. It's a weatherbeater. Ask any man who is feeding grass silage how he became a convert and the answer in probably 90 per cent of the cases will be some variations of the theme, "The weather drove me to it. My first cutting hay was always a mess so I decided I might as well try silage." This isn't to suggest that good grass silage can be made in a downpour. Even if the equipment could be moved into the field the crop would be much too wet to handle. But as soon as the ground is solid enough to support tractors and wagons the crop can be cut and ensiled. This makes a big saving in nutrients—protein, carotene, and vitamin A.

Grass silage can be made from practically any kind of grasses and legumes as long as they are cut at the right time. Right time, in general, means early. Alfalfa, Ladino, red clover, sweet clover, orchard grass, blue grass, brome grass, fescue, all make good silage and about a 50-50 mixture of grasses and legumes is considered the best combination. The legumes furnish the protein and the grasses help provide the sugar which is important in the ensiling process and in which the legumes are notoriously weak. But more about that a little later when we talk about what goes on inside a newly filled silo.

Even the small grains make good silage when handled properly. Wheat is usually too valuable to be cut for the silo; but oats are a crop that some farmers are finding much more valuable as silage than as grain. D. L. Staheli, a staff member at the University of Illinois who worked with faculty members on a silage feeding experiment with beef calves during the past year, points out that "oats fed as silage will return at least three times as much income as when harvested as grain.

"We figure the oat silage we made from a measured acre and fed our calves was worth $124.69 on the basis of the gains the calves made. Most Illinois farmers are happy to get $25 from an acre of oats when they are combined."

The thing to remember when tempted to put up silage from a small grain crop is that it is almost impossible to do a good job of ensiling a mess of hollow stems.

Grass silage is no crop to tackle without the right kind of equipment. This farmer is using a wagon with a false end-gate and an electric unloader to feed the green forage into the blower.

So the best time to cut the cereals is just as they are beginning to head, call it the boot stage, if you will. Tonnage may be reduced but the nutrients will be higher and the product will be silage rather than a soggy straw stack.

Of all the secrets of making good grass silage the time of cutting is by far the most important. No one could be more emphatic on this point than George Werner, of the Dairy Department, University of Wisconsin. There are few people within the boundaries of the United States who have sampled more grass silage than Werner in his silage clinics. He lays down the rule that the four most important elements in silage making are moisture content (which is greatly influenced by time of cutting), length of cut, rate of filling and compaction. Then he goes on to say that "more grass silage is ruined by cutting too late than by any other single factor. Farmers up here, just like everywhere else, I suppose, are in the habit of cutting their hay crops on a certain date, maybe it's the second of July or the fifth, because that's the way Dad did it. They pay little or no attention to the stage of maturity of the crop. As a consequence they get poor silage and poor hay."

Summarizing the experience of the best silage makers he says, "Your legumes—alfalfa, Ladino, or whatever you may have—should be cut when they are about 1/10 to ¼ in bloom; grasses should be cut when they are just about heading; and mixtures of grasses and legumes should have the mower put to them at the best stage for whichever crop predominates. Always try to be on the early side whenever there is any doubt."

As to length of cut, Werner talks about short, medium, and long. Anything under ⅜ inch he calls short; ½ inch is medium, and ¾ to 1 inch is long. Grass that has high moisture content should be cut long; the drier it is the shorter it should be cut and the faster the silo should be filled to avoid trapping air and to aid compaction.

Inside the Silo

To understand the thinking behind these suggestions, a digression for a look at what happens in the ensiling process will prove quite helpful. When the forage is cut, it is a living, breathing plant. Assuming that it is dumped or blown into the silo within a reasonably short length of time after it is cut, it continues to breath and, if it is packed well, it soon uses up all the oxygen present, replacing that gas with carbon dioxide. If the mass of material is not packed well and there is air present, molds will form. These can form only in the presence of oxygen.

The oxygen-less condition is favorable to the growth of certain acid-forming bacteria which now multiply by the millions. They work on the sugars in the grasses (since grasses are much higher in sugar than the legumes this is why grass or a grass legume mixture is easier to ensile than straight legumes; it is also the reason that corn silage is so much easier to make than grass silage) producing lactic acid, some acetic acid and some alcohol. The acid plays a very important part in the ensiling process for it prevents the growth of undesirable bacteria which cause spoilage and it eventually even checks the growth of the friendly bacteria. When the work of the bacteria is stopped that is the end of the ensiling process. The silage is stabilized and will remain in this condition for an indefinite period as long as it is not disturbed and air does not enter.

The importance of the moisture content of the forage going into the silo is this: Too much water in the forage contributes to the wrong kind of fermentation in which butyric acid is formed and the silage stinks. Also, the presence of too much moisture will cause the silage to become waterlogged and it will not heat up to the 100 degree temperature which is most favorable to the development of the friendly bacteria. On the other side, material that is too dry is very hard to pack, the air cannot be kept out and moldy silage is the result. Silage that is too dry will heat excessively, too, and will lose much of its feeding value, particularly vitamin A.

Moisture Test

To return to the practical, the optimum moisture content for a crop ready to go into the silo is 65 to 70 per cent; that is, 35 to 30 per cent dry matter. A moisture tester is a very handy gadget for accurate determination of moisture content, but it is not at all necessary for the individual farmer. The extension departments of many of the experiment stations have been using them on field days to help teach farmers how to develop the "feel" for the varying degrees of moisture encountered in prospective silage material. The most widely used and the most practical test is still the grab test. A ball of finely chopped forage—about a ¼ or ⅜ inch cut—is squeezed in the hand for about a half minute and then released suddenly. If the ball holds its shape and there is a lot of juice the forage contains over 75 per cent moisture and is too wet to go into the silo without the addition of a preservative like ground grain to soak up the excess moisture.

If the ball holds its shape but there is very little free juice, the moisture content is probably in the 70 to 75 per cent range.

Should the ball fall apart slowly and there is no free juice there is some 60 to 70 per cent moisture present.

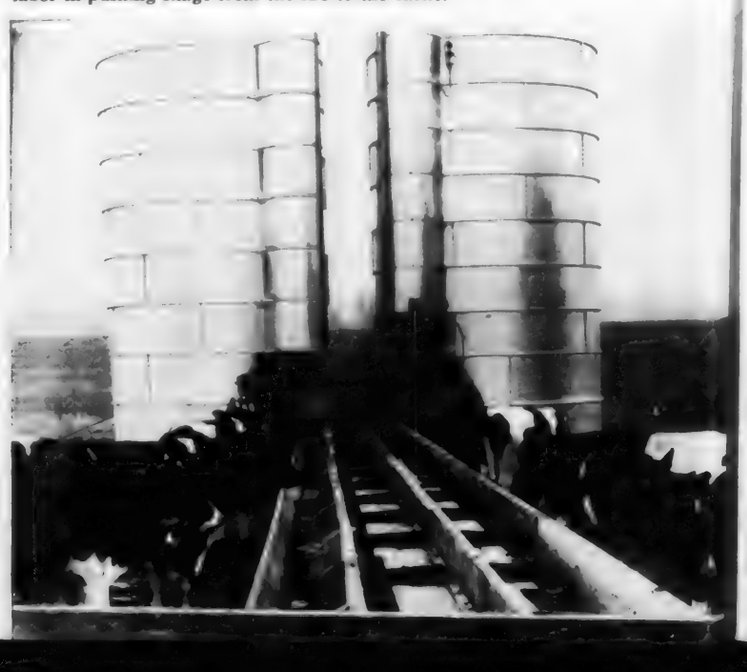
When the ball springs apart, the moisture content is below 60 per cent and water would have to be added to the material to make it pack well enough to prevent molding.

What About Preservatives?

Most silage makers seem to feel that preservatives are not necessary when everything goes perfectly with the machinery

Feeding is no problem for William Thiessen. He throws the switch and the silage falls into a revolving bunk.

The Jamesway shuttle stroke cattle feeder saves time and labor in pushing silage from the silo to the cattle.



and forage. The chopper, although set to deliver a theoretical ¼ or ½ inch cut, will blow longer grass into the wagon, which means air will be trapped with the silage. Breakdowns cause windrowed forage to drop below 60 per cent moisture, or the grass grows too long and is on the stemmy side. Parts of it are too dry and do not pack tightly, so air is trapped.

This and the fact that immature grasses and legumes are low in sugar are the reasons preservatives may be needed. The principal ones are ground corn or ground corn and cob meal when silage is too wet; molasses, when silage is on the dry side; and the newest chemical preservative, sodium metabisulfite, made by General Chemical Company of New York and Monsanto Chemical Company of St. Louis. This is used at the rate of 8 pounds to the ton and works best on silage of 65 to 75 per cent moisture. It is an excellent preservative and will retain considerable green color in the silage itself.

In the European countries an acid preservative known as A. I. V. is widely used. The A. I. V. is from the name of its developer, A. I. Virtanen.

Wilting is something of a preservative because while it reduces the moisture content, it also increases the amount of sugar in each pound of forage. It increases the percentage of sugar in the forage, too. Whether wilting is necessary or not depends entirely on moisture content. If the moisture is below 70 per cent as indicated by the test outlined above, wilting probably isn't necessary. With higher moisture no more than two to three hours in the bright sunshine and wind should be necessary.

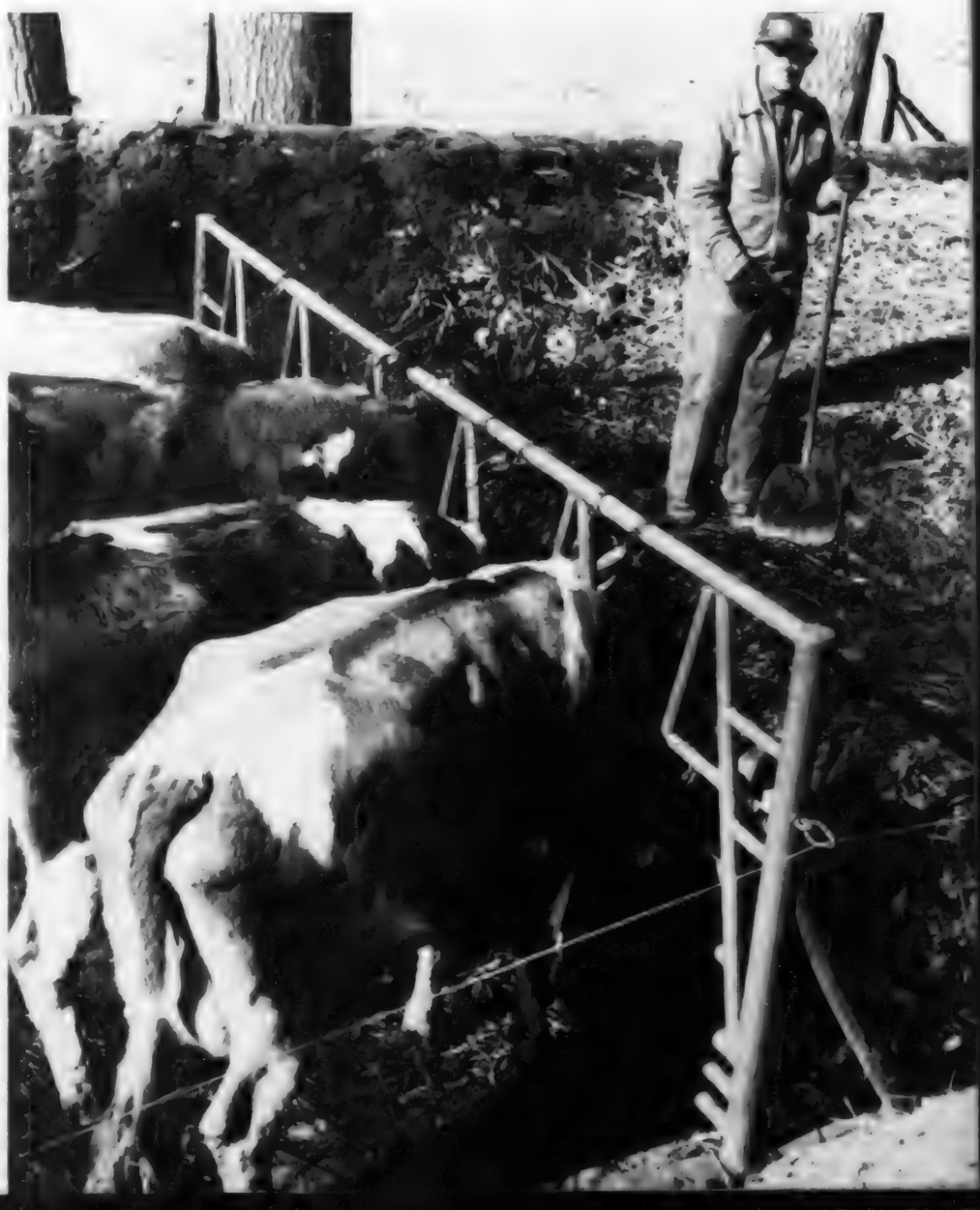
It is always a good idea to put the drier material in the bottom of the silo where it will be subject to greater compaction. The top material, the last 8 to 10 feet in a 30 to 40 foot tower silo, should be put in without any wilting whatsoever.

Ground Grain

For very wet silage ground shelled corn or small grain, or corn and cob meal is one of the best preservatives. The grain absorbs some of the excess moisture and at the same time adds nutritive value to the silage. While the fermentation process will break down some of the nutrients in the grain very little will be lost unless the silage is so wet that there is excessive run-off from the silo. Whatever expense is incurred in adding the concentrates will be returned in the added feeding value of the silage.

How to add these ground grains is a good question. William Harper, an Illinois farmer who filled a 350 ton bunker silo last summer spread the ground grain on the floor of his wagons before filling them in the field. This worked fairly well,

(Continued on page 144)



Without a concrete floor a trench silo (above) will degenerate into a mud hole with the coming of bad weather. Four inches of concrete poured with a 4-inch crown in the center will make a good floor. The pipe gate (below) is just the ticket for self-feeding. Cattle should never be forced to gnaw silage out of the stack. Chopping with the jabber 15 minutes twice a day will loosen up enough silage to keep them filled.

New Ways to Make GOOD HAY

ALL THE RULES for making good hay can be summed up in one phrase—proper timing. Haymaking is simply an effort to capture all possible palatability and richness of the forage crop and to store it away in good condition for future feeding. This means the crop must be cut at just the right time, protected from bleaching by the sun, leaching by rain, overheating in the windrow or when stored in too high moisture: and it must be handled just as little and as carefully as possible. That's a mighty big order to fill, but it can be done. Each obstacle can be overcome only by timely action based on good, sound experience and judgment, which makes haymaking something of an art and the good haymaker an artist.

Fortunately, the implement people are giving today's farmer a big boost toward reaching the artist class. Mowers, field choppers, hay crushers, balers, all the various forms of barn driers, and the accessories that go with these machines, are all designed with one end in mind, to put high quality hay in the barn as quickly as possible and with a minimum of deterioration from sun and weather.

Which form of hay to put up—long loose, chopped or baled—is a matter that is determined generally by the individual farmer's management practices, the kind of buildings he has, and the labor available. If the livestock were asked their preference, they would probably pick the long, loose stuff: at least that is what most of the palatability tests conducted at experiment stations around the country seem to show. And when it comes to making the absolutely best hay, field curing ranks right at the top of the list when all conditions are perfect. Meeting that exacting list of perfect conditions, though, is a real chore.

A lot of farmers have turned to grass silage in their efforts to solve their forage problems (see article on silage in this issue) but there is still a vast crowd who either feel incapable of making good grass silage or who for one reason or another want nothing to do with it. The dyed in the wool hay man insists, "If farmers would put half the effort into making hay that they put into grass silage, they would turn out some excellent hay."

There are plenty of facts and figures to back up that opinion. Look, for example, at some of the following: The early bird in haymaking who cuts his alfalfa before bloom has a good chance of winding up with a barnful of hay that will test at least 20 per cent protein. This, of course, is the optimum expectation. If he cuts it in the early bloom, he will likely get a heavier yield, but his protein content will drop about 4 points; and if he waits until it is in late bloom or past bloom, he will find his protein content slipping on down to 13 per cent and below. And while its protein content is slipping, fiber content is increasing. Rough handling and too much rain or sun will lower these figures materially.

Then, look what happens to the general feed value of the hay crop as the season gallops on. USDA has compiled figures that show that the same acreage of alfalfa which when cut in the early bloom stage and put through a cow will produce 404 pounds of butterfat, will produce but 345 pounds when cut at the half bloom stage and only 331 pounds when cut when the field is in full bloom.

Carotene content slides rapidly, too, as

The boarding house reach applied to hay making. The Snowco bale loader grabs the bale and heaves it up to the man on the truck.

The Peirson-Moore wagon drier is designed for overnight curing of 8 tons of 40 to 45 per cent moisture content hay.

A good baler never manhandles the hay. The crop should be baled before it is so dry that serious leaf loss will occur. For artificial drying bales should be no more than 30 inches long and should not weigh more than 50 pounds.

the standing crop matures. After the hay is cut it is subject to further deterioration from weathering, either from bleaching by the sun or from leaching from rain or dew.

A Couple of Kings

To get a line on how some of the top haymakers get their reputation, let's drop in on the two men who were named Hay King and Crown Prince respectively, at the '54 International Hay and Grain Exposition.

The King is Clyde W. Scales, of Osawatomie, Kansas. His prize-winning exhibit was a bale of bluestem prairie hay. He cuts and bales about 1,000 acres of this every year. Out there in the prairie region south of Kansas City, Scales follows no rotations, uses no fertilizer. With him it's simply hay, hay, hay and more hay. He gets about a ton to the acre, usually on one cutting. As his is a completely commercial operation—he sells all his hay except a little he keeps to feed to a few cattle—he puts up all his hay in wire-tied bales.

His principal markets are stockyards, race tracks and the big livestock expositions. Spoiled hay he sells to contractors for mulching banks and berms; some of it moves south in the spring for mulching watermelons.

But Scales doesn't figure on spoiling much hay. "If you cut it at the right time," he says, "and handle it properly right on through, you're going to come up with good hay."

"We cut this prairie hay the last week in June or the first in July. That's when it's in the pre-boot stage," he explains. "If we let it go till the middle of July, it gets coarse and stemmy. We're likely to get some rain, too, in mid-July, and that complicates matters. Dew can do enough damage to hay without taking a chance of getting it rained on.

"We cut early in the morning and windrow that same afternoon with our International and Case side delivery rakes. I always want it windrowed before the dew gets on it. Usually we bale the next day as soon as the dew is off, although we frequently bale the same day we cut. The hay we won the championship with this year was cut the first week in July and baled the afternoon of the day it was cut in a 120-degree temperature. It still takes plenty of sweat to make good hay."

The Scales crews of 10 to 12 men cut no more hay than they can bale in a day.

usually 25 to 30 tons. They usually use two mowers to a crew, and one or two rakes. He says he finds that two balers—an Oliver hydraulic threader and an automatic New Holland—are as many as he can operate efficiently in a field at one time. He has found from experience that his balers work best with a moderately large windrow. If he makes his windrows too big his balers choke up.

His bales are 14x18x42 inches, weigh 72 pounds. They are dropped on the ground behind the baler and picked up by a Snowco bale loader attached to the truck. This particular kind of bale loader looks like a long spider arm with two big claws on the end. It extends out from the side of the truck and automatically grabs every bale it touches and throws it up on the truck. Hauling crews are cut to two men, one to drive the truck and one to stack the bales which the loader throws up.

"It's mighty important to get the bales under cover as quickly as possible," Seales says, "to keep the green color from being bleached out. Most of our hay is stacked in barns on the farm, or in our warehouses at Pleasanton and Parker, Kansas.

"We always stack our bales on edge to increase the air circulation and we stack them criss-cross."

The man who won the reserve title at last year's International is Roger Brew, who hails from Dunn County, North Dakota. Roger and his father, Dan Brew, run a beef cattle and commercial hay operation. They own 580 acres and lease another two sections. Alfalfa is their specialty. Last year father and son, with practically no outside help, put up 350 acres of hay. That one little statement goes a long way in telling of the efficiency of their equipment—3 Ford tractors, and mowers, a Case and a John Deere side delivery rake, a New Holland 77 Baler and a New Holland Bale Loader. The last piece of equipment Roger swears, "is the handiest thing on the place."

The Brews' favorite alfalfa is Grimm. They farm in a country where they can let their bottomlands go for as long as 12 years without renovation. Their usual rotation is alfalfa for 7 or 8 years, then wheat, then back to alfalfa. They average about 3½ tons per acre per year and in most years get only two cuttings. Last year, however, they got a third cutting in September and that is the one which produced the bale that won the top spot in alfalfa competition at the International.

"Early cutting is what makes good hay," is Roger Brew's opinion. "We start mowing when the fields are not more than one-tenth in bloom. The forage is never coarse at that time and is high in protein."

The Brew formula is to cut early in the morning and to windrow and bale the same day if possible. This they can do out in their part of the country where humidity is low and sun and wind pull the moisture right out of the hay. If the bales seem to be too high in moisture they let them sit in the field for a few days. "Doesn't hurt them at all," says Roger. "By early baling you don't risk shattering the leaves and this will more than make up for the little bleaching that may occur from letting the bales sit in the field a little longer. You can lose a powerful lot of nutrients from leaf shatter.

"Most of our hay," he continues, "we stack in the field and feed out in racks during the winter. Our baler is a twine tie model and the one thing you want to watch when stacking twine-tied bales in the field is never to put the string side down on the bottom row. The strings will rot and away goes your stack."

Another Alfalfa Champ

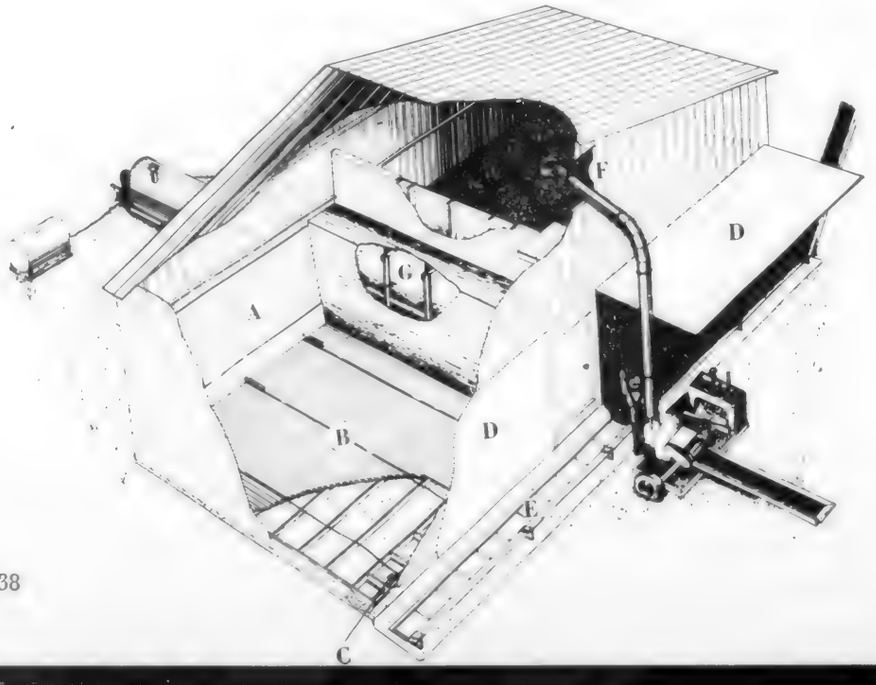
Back in the more humid part of the country, L. M. Kissell, of Springfield, Ohio, grows and bales the kind of alfalfa that has carried him, too, to the championship ranks at the International. He was Hay King in 1951. To Kissell's way of thinking it's the baler that deserves the credit for making first class hay. "I put up 40-inch, 70 to 75-pound bales," Kissell explains, "and I have never seen anything that handles the hay as gently as my Minneapolies-Moline baler. I don't care how careful you are in curing your hay, if the baler manhandles it, it is going to turn out considerably less than the product you were aiming for.

"That's true of raking, too," he continues. "Hay that has gotten too dry takes an awful beating in raking. I use an Allis-Chalmers power-driven side delivery rake that gives me a good range of raking speeds. A faster speed makes for a fluffier windrow, but when I get into pretty well cured hay I slow down the reel speed to keep from having a lot of leaf shatter."

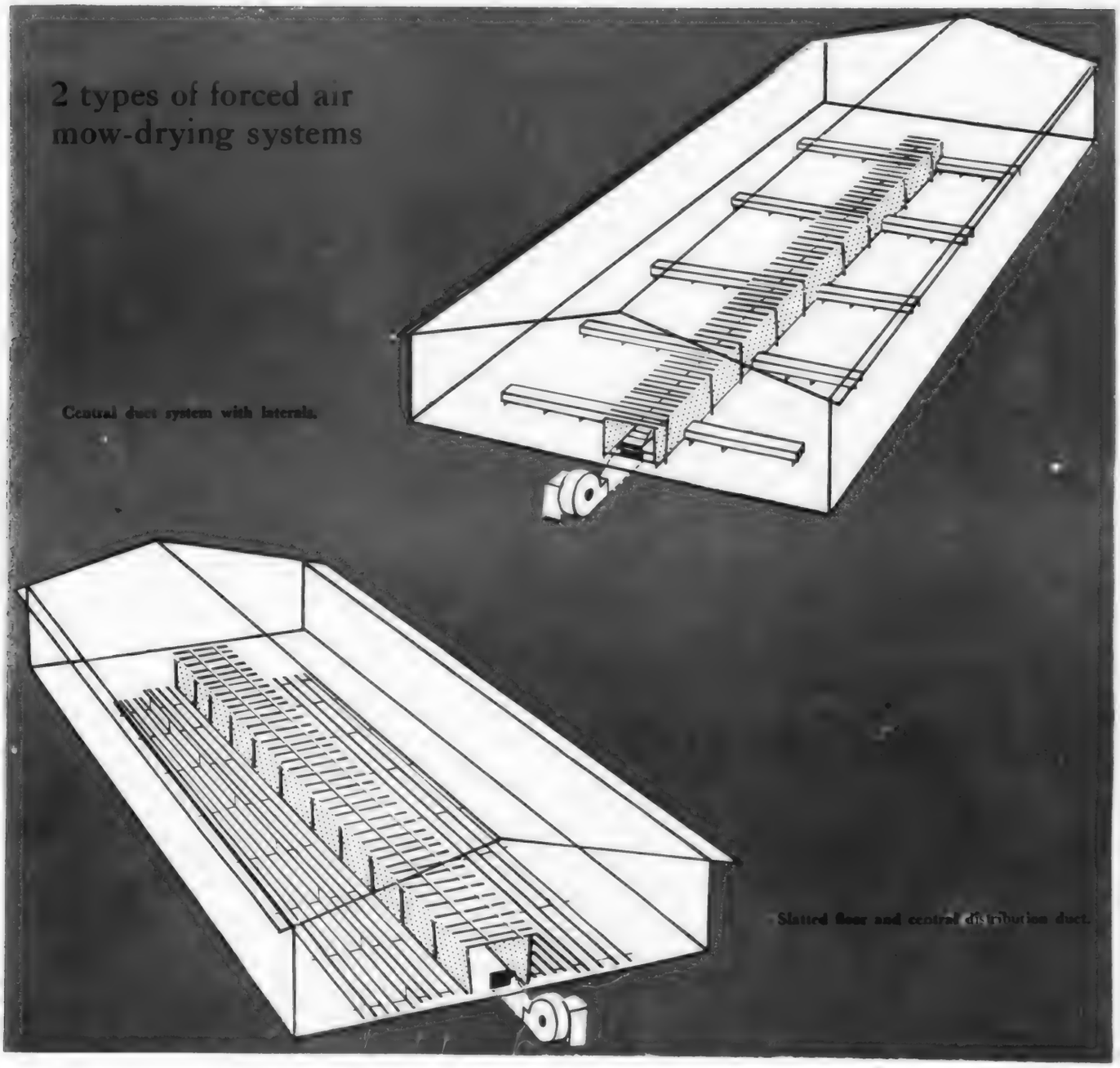
Kissell waits until his alfalfa is about 25 per cent in bloom before he starts cutting. This is usually around the first of June in his part of the country. His theory is that although he may be sacrificing some of the protein and carotene content he might have captured by cutting earlier, he will run into a little better weather and come out with just as good a product in the long run. He does most of the curing in the swath and tries to rake within 24 hours after cutting. His only guide as to when it is time to rake is "when the hay is dried out on top a little," he says.

Notice the contrast between the Ohioan's methods and those of Seales and Brew. These two usually cut and rake the same day. Since he is in a region of much higher humidity, Kissell is happy if he can rake within 24 hours after cutting.

Kissell's remarks on raking underscore the great importance of controlling leaf shatter. Out at the University of California they conducted some experiments on this point and this is what they found: When the moisture content of the hay is above 55 per cent most of the shatter loss is merely trash and diseased leaves—in other words, good riddance. But as the moisture content of a crop of alfalfa hay drops below 55 per cent, the moisture in the leaves, which dry much quicker than the stems,



To help spread the cost of hay drying to other operations, the Agricultural Engineering Department of the University of Wisconsin has designed this all-purpose crop drier which can handle grains as well as hay. The building is 20'x40' and has the following features: (A) a sliding gate that can be pulled forward across the slatted floor (B) by cables that wind on drum (C). The hinged fronts (D) open outward to permit the dried hay or grain to fall onto a conveyor (E) by which the crop can be loaded into wagons, trucks or adjacent storage buildings. The air used in the drying process is forced out through the gable end opening (F) which opening is also used for filling the building. The plenum chamber (G), through which the air is forced from the drier in the rear, divides the building into two sections.


2 types of forced air mow-drying systems
Central duct system with laterals.
Slatted floor and central distribution duct.

will often be below 20 per cent and the shattering takes place at an ever more rapid rate as the moisture content decreases. The California experiments show that as moisture content of a sample of hay fell from 55 per cent to around 30 per cent, protein content dropped from 21 per cent to 10.5 per cent because of leaf loss. The shattering always seemed to be caused by mechanized handling when too dry rather than by the method of curing. There was some carotene loss as the hay dried out, too, but this apparently was caused more by exposure and enzymic action than by leaf loss. The California people concluded from their experiments that for best results alfalfa should be raked when the moisture content is between 65 to 55 per cent.

To Speed It Up

The increasing realization of the importance of the time element in making hay has led in recent years to the introduction and refinement of the hay crusher and the barn or batch drier. And the popularity of the drier, in turn, has been promoted by the use of the forage harvester or field chopper. The chopper is a terrific labor saver in the hay field but if it has to work with material that is too dry it cannot turn out the best possible product. Used in conjunction with some type of artificial drying setup it is an ideal implement.

But let's take a look at the crusher before getting into the intricacies of artificial hay drying. Since the leaves of the hay dry so much faster than the stems, the theory on which the crusher works is that by cracking and crushing the stems more surface will be exposed to the air and drying time will be reduced. The theory works, too. Farmer experience as well as experiment station tests show that crushed hay cures in 30 to 50 per cent less time than uncrushed hay. Another advantage stressed by farmers who have used the machine is that in picking the swath up for the crushing operation and laying it down on the ground again air is pushed into the swath, another aid in drying.

The crusher is simply a mower with a pair of heavy power-driven rollers following the cutterbar. On some machines the rollers are directly behind the cutterbar and pick the hay up immediately, on others they are behind the tractor and pick up the swath the second time around. The well adjusted crusher uses just enough

(Continued on page 138)

The Dairyman's Dilemma

Dairymen will have to live with mastitis for a long time, but it can be controlled. Here are the latest methods

ONE OUT OF EVERY FOUR of the 25,000,000 cows in the United States has, or has had, mastitis. It is as common among cattle as the common cold is among humans, just as hard to control, and much more dangerous and costly. Every time mastitis strikes in even one quarter of an udder of one of your cows, it dips a finger into your pocketbook. The average yearly loss per dairy farm in New York is estimated at $300. That is probably typical of the whole country. That is your potential loss for a year. If you are unlucky and your whole herd is infected, you may be wiped out.

It appears that dairymen will have to live with mastitis for a long time to come. But it can be controlled, and at any given time it is possible to eliminate it entirely from a herd.

Before we discuss controls, let's take a look at the disease itself the better to understand how we can handle it. Mastitis is inflamation of the udder. What makes it so difficult to combat is that it is not caused by a single germ, as is tuberculosis or brucellosis, but by as many as 50, with a few fungi and yeasts added. A scant half dozen are responsible for most of the cases, and one particularly bad character, Streptococcus agalactiae, accounts for at least 50 per cent of all cases. These germs are everywhere—on the barn walls, on the floors, on your hands, in the air, on the wire of your fences, clinging to the sharp ends of weeds, and carried by flies. To eliminate all of them would be like eliminating all outdoors, and if they were eliminated, the methods used to eliminate them would at the same time eliminate all the good bacteria and the life processes would stop.

The inclined shelf of this strip cup permits closer inspection of abnormal milk.

In almost all cases the mastitis germs come from outside the cow, entering the udder through the teat canal or through abrasions or cuts on the teat or udder. One or all four quarters may be infected and the disease may be acute or chronic. If acute, it develops fast, and the cow falls off her feed, her production drops, and she may die. If chronic, the germs may be walled off in the udder for a period, breaking out from time to time as the body defenses weaken under high production, poor feed, cold, mistreatment, or injury.

One of the reasons why mastitis is so difficult to control is that the modern cow is a freak, with an udder out of all proportion to the rest of her body. It is a sort of artificial growth put on by man. It is highly delicate and, containing the best of all germ food, warm milk, it is the ideal home for a germ bent on multiplying and doing mischief. The cow has little control of her oversized udder and protects it badly. It gets stepped on, scratched, bruised from contact with door sills and fences, and it gets tugged at twice a day by what the cow must regard as an infernal contraption, the milking machine. The modern cow's udder invites trouble; and mastitis is largely a product of the mechanical age.

Prevention

Never was so true the old saw, "An ounce of prevention is worth a pound of cure." The ounce of prevention begins with the calf, for from healthy calves come healthy cows, and a healthy, uninjured cow is the best insurance against mastitis. If the calf is properly fed and housed and arrives at heiferhood with a sound, healthy body her chances against having mastitis are increased manyfold. Careful management and extreme sanitation apply both to the calf and the cow as the best prevention of mastitis. Attack the disease from the herd standpoint: the overall health of a herd is more important than the health of the individual cow.

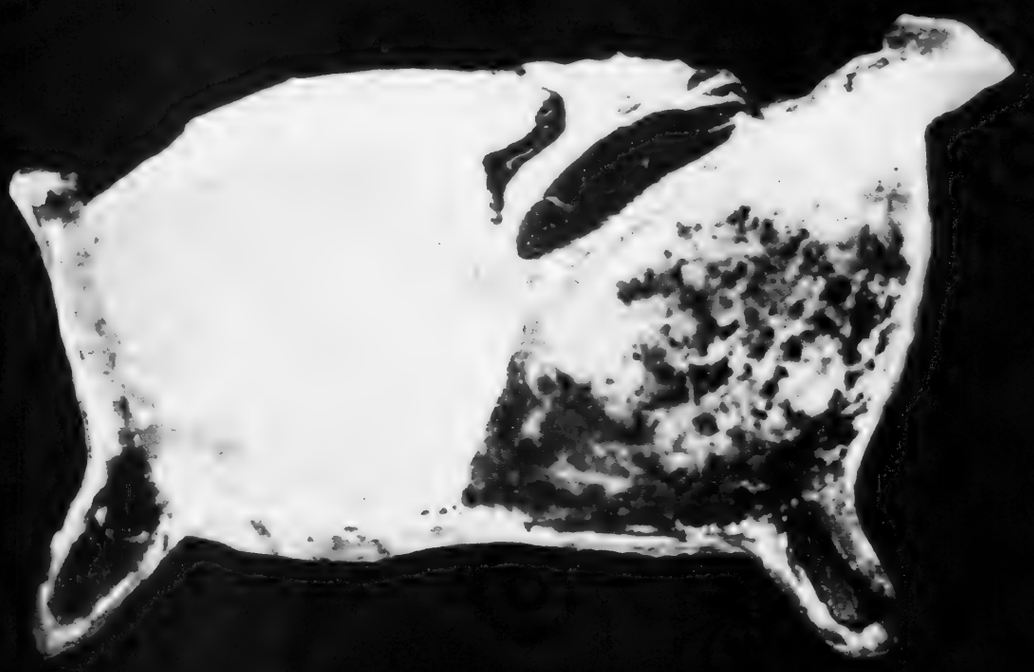
The proper use of the milking machine stands at the head of the list of preventives. See that the vacuum is correct and the pulsations perfectly timed. Housing should be draft-free but well ventilated. Bedding should be clean and of ample depth, and stalls and stanchion space roomy enough for animals to move without cramping each other. Construction hazards such as high sills, protruding parts of barns and fences, and rubbish piles, should be eliminated. Stagnant pools of water both in the barnyard, pasture and lanes are breeding places for germs; the dryer the operation the more germ-free it is. The teat cups and milk lines should be disinfected carefully, taking care that the disinfectant is not too harsh for the delicate udder tissues of the cow. There should be no milk on the floor at any time. Scabs should not be picked off the udder or teats and fly spray should not be allowed to touch the udder. Any damage to the udder or teat such as a teat tumor, or a laceration should be attended to at once, preferably by a veterinarian. Infection can spring up quickly during the drying up period; drying up should be done with care and skill. When the udder is washed, the cleansing should be thorough, but strong disinfectants and improper drying of the udder after the washing are invitations to infections. Dip teats in an antiseptic solution after milking. At the end of the milking operation the end of the teat is slightly dilated and also a small droplet of milk remains on the teat end. Removal of this residual milk by dipping the teat ends in a 200 to 250 parts per million chlorine solution, a 2 per cent oil solution (soluble pine oil)—1 tablespoonful in 1 quart lukewarm water—or ordinary rubbing alcohol, washes the milk from the end of the teat, acts as a disinfectant, and removes an attraction for flies during the summer months. The temperature of a disinfectant used on the machine is important; a cold solution is much less effective than a hot one.

Never use the barn as a human toilet. Don't milk if you have an infection on your hands or face and don't allow anyone around the barn who has a sore throat or a pus infection of any kind; and keep the cow calm. At the first sign of mastitis lighten her feed as her production goes down.

Eternal Vigilance

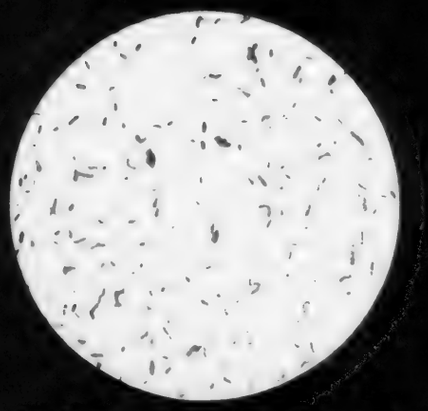
Now let us suppose that you are one of

(*Continued on page* 132)



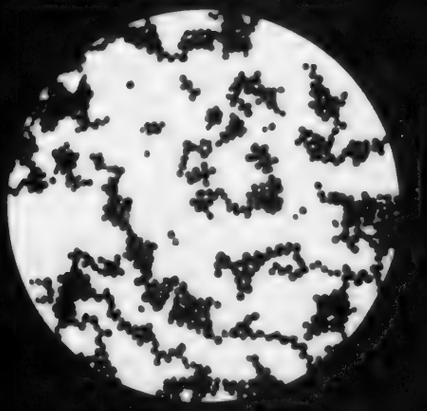
This is a slice of a frozen udder which shows how a product should penetrate to all parts of the quarter in order to control mastitis. A dye has been injected into the left quarter through the teat, but has penetrated only to the base. On the right, the dye has penetrated to all parts of the quarter. The ideal ointment would have the same penetrating power as a dye. Below are drawings made from microphotographs of four of the numerous organisms which cause mastitis. They have been stained for greater visibility.

Escherichia coli is a variety of Streptococci of lesser importance. Certain rare yeast molds also cause mastitits.



Aerobacter aerogenes is another variety of germs which causes mastitis. This type seems to be on the decrease.

Staphylococcus aureus is a highly dangerous organism and sometimes causes death. Streptococcus rarely does.



This is the Streptococcus agalactae organism, held responsible for a high percentage of mastitis infections.

Corn Bread

By Eleanor Cullen

PHINIAS CANTRELL was born and bred in the South, where corn pone, corn squeezins, corn on the cob, and all manner of things made from corn are as mothers' milk. When Phinias found himself stranded in the North, through no fault of his own you may be sure, he spent most of his time looking for the kind of corn bread he had been raised on. From explaining so many times to damnyankees just what a good piece of corn bread tastes like, and how it is made, and how the meal is ground, he got to be quite an authority on the subject.

He'd give you a full dress lecture at the drop of a hat. Just offer him a piece of Northern Bread, and off he'd go.

"This stuff ain't fit for man or beast," he'd say. "No more flavor than a piece of burlap. Now you take corn bread, there's something that will stick to your ribs. Corn bread is a body builder, and it tastes fine. Let me tell you how to make corn bread.

"To make good corn bread, the way we make it in the South, you have to have just the right kind of meal, meal ground on stone burrs. But let me start at the beginning.

"First, you get yourself some good corn. We always use yellow corn. It's sweeter to my way of thinking and the bread has a good yellow to it. If you can't get yellow meal, white will do, but it's milder in flavor. For the most part we make corn bread from freshly ground meal that is still warm from the friction heat of the burr stones, as warm as the underneath side of a settin' hen, and buttermilk from the morning's churning.

"There was a time when we could get water ground meal, which was better because the mill stones turned slow-like, and didn't scorch the meal, like a motor driven mill sometimes does. Another thing, the meal absorbs some of the dampness that was always around a water mill and this gave it a little different flavor. But you had to watch any meal you had on hand to see that it didn't spoil from the dampness. Somehow we liked it better than the meal we get from today's mills that are run by engines."

Phinias has a mild contempt for the "factory" meal now sold in grocery stores. "It lays around on the shelf and loses its flavor," he says, "and it isn't the best

when it is fresh. But if you can't get anything else, use it. Even that kind will make better bread than wheat flour.

"There's some city folks who don't know the difference between good corn bread and a mash you mix up for the pigs. They drive long distances and pay fancy prices for stone-ground corn meal because they think it's quaint. We don't think it's quaint; we just know good corn bread and we know you can't make the best corn bread unless you have the fresh meal out of a burrstone mill."

To the Southerner the best corn bread is "Yellow Bread," which calls for fresh eggs and butter and tastes more like cake in comparison to the bland tasting "Shortenin Bread," made famous by the popular song.

"To make the best tasting Yaller Bread that can be found below the Mason-Dixon line," says Phinias, "you mix together two cups of corn meal, a teaspoon of salt and one teaspoon of soda. After the dry ingredients are well mixed, add two cups of sour milk and two eggs. Beat the eggs well before adding them. Melt one-fourth cup of butter and pour it into the batter and it will be just thin enough now to drop loosely from a spoon into a pan that has been greased and warmed. Stoke the fire until the oven is at 375 degrees, put the pan of batter in, and bake for half an hour.

"We fit the size of our recipe to the size of the family," continues Phinias. "The two-cup recipe will fill a pan 8 by 10 inches. When we were boys at home, we had corn bread three times a day. There would be a pan half as big as the top of the stove full of golden bread, baked to a fine crusty brown and cut in rows of even squares. I've not seen a pan of good corn bread of any size since I left home.

"My brother's wife, who is short on most everything else, makes a good meal bread the way she learned back in her home in Kentucky. They don't use any eggs and for the most part, cook their bread in a skillet. They call this 'Shortenin Bread' and some people, especially in Kentucky, think it's the best kind of corn bread.

"Shortenin Bread is easier to make than Yaller Bread. There is one recipe that calls for wheat flour, which keeps the bread from crumbling, they say. Shortenin Bread calls for a lot of melted lard or bacon drippings. This grease is to Shortenin Bread what yeast is to a loaf of Northern Bread. Most all the good Shortenin Bread experts use white meal. Why I don't know.

"In making Shortenin Bread, the first thing is to heat the oven to a hot 450 degrees for the 25 minutes baking time. Then measure out 4 cups of meal into a big iron skillet. Add a good sized teaspoon of salt and stir in two cups of sour milk and a fourth cup of drippings. If you haven't a cow or can't get milk, water will do. Early settlers made a bread that wasn't much more than meal and water. It wasn't the best, but it was corn bread. Corn bread is like whiskey—there's no such thing as bad whiskey. Some is just better than others.

"Made either way and covered with beans, cooked sweet with jowl, and a glass of buttermilk or with mustard and dandelion greens picked in early spring, or kale made tender by the first frost, there is nothing better anywhere.

"Then there's Spoon Bread. That's the angel food cake of corn bread," says Phinias.

"Now the best recipe for Spoon Bread, like in politics and religion, is a matter of opinion. Spoon Bread takes a little more time and care than plain cornbread or griddle cakes. First, heat one quart of milk in a double boiler; drop into this an egg-sized lump of butter. Pour the hot liquid over two cups of corn meal to which you have added a little more than a teaspoon of salt. Stir until the meal and milk seem to be one: then add two egg yolks that have been beaten. Spoon Bread, which is more of a sponge cake than a bread, must be light and fluffy. Here is where the cook must use her sixth sense. Beat the two egg whites to a stiff peak, then fold quickly into the warm mixture. Have a well-buttered, warmed earthenware dish ready, pour in the batter and bake in a hot oven (400 degrees) for 30 minutes or until the bread is firm in the middle. If it isn't done just right and isn't timed right, the bread turns out flat.

"For a man who likes his corn bread golden brown," says Phinias, "get a corn stick mold and make up a batch of corn bread batter, any kind of ordinary batter will do. The mold is usually made of cast iron and may or may not have a cover, which is hinged. The molds are in the shape of ears of corn, usually six in number. You pour the batter in one side and close the top and put it in the oven. The bread will rise and cook against the impressions to make a pretty piece of bread. It tastes like any corn bread, but is easier to butter and handy to eat.

"We always have something special with a. mess of catfish," says Phinias. "We'd make a corn meal dumpling that we call Hush Puppies. For a long time Northerners didn't know about Hush Puppies, but once they ate them, they came back for more. Generally they are fried along with fish but always in deep, hot fat. To make Hush Puppies, sift together two cups of corn meal, two tablespoons of flour, one teaspoon of baking powder,

(Continued on page 131)

There was a water mill in every community in the old days. Its stone burrs and slow and easy pace turned out the best corn meal. A few survive, but in most the stones have been replaced by steel burrs and the water power by an electric motor. This mill is in operation in the Great Smokey Mountains National Park. Its fine corn meal is bought mostly by tourists.

Book Farmer

By George Laycock

THERE IS NO doubt in Rabin Pullin's mind that the day of guesswork farming is past. "You can guess yourself right out of business," he says.

When Pullin wants the answer to a question, how to feed a hog or when to sell it or how thick to plant corn, he can turn to his records. He is convinced that most of the success he has had with stock and crops can be traced to his habit of keeping records on everything from electricity required to raise a pig to weaning (it was 22c in 1951) to the boar expense per pig (62c). And his success has been considerable.

Pullin is recognized as one of the top hog men in his section of northern Indiana. Last spring, with 36 sows farrowing, he maintained his five-year average of nine pigs per litter sent to market. A look at his books showed him that he held mortality to five percent from birth to market, an all-time low for his Jasper County farm. Pullin's books also show that, from that farrowing, he sold 69,775 pounds of pork. What's more, he knows what it cost him to produce that pork . . . less than 10c a pound . . . 9.6c to be exact, and Pullin insists on being exact. "Cost of gain for feed," say the records, $9.63 per 100 lbs. As follows:

Corn 310.4 lbs. (5.54 bu.) @ $1.50	$8.31
Protein 24 lbs. @ $110 per ton	1.32
334.4 lbs.	$9.63

He can scan other columns in his books and see that his corn last year averaged slightly above 100 bushels per acre. His records have helped him make the change successfully from a small to a large farm at a time when the cost-price squeeze was felt across the land. Meanwhile he built and equipped an efficient farm shop, took on a full time helper and continued to add to an impressive inventory of machinery. He has accomplished most of this in the past seven years.

"I thought once," says the 37-year-old Pullin, "that I'd study business administration and go into industry." He did, in fact, spend a year in college studying business administration before he came home to farm with his father and brother.

Then came World War II and Rabin and Charles, the third generation on the family farm, drew lots to see which would go into service and which stay on the farm. Rabin stayed. But during the war

years he drew the same pay his brother drew in the army and they drew equal shares from the farm profits and savings.

They dissolved their partnership in 1947, took their individual savings and went into farming, each for himself. That was the year Rabin built his house and married. He built his house on a 68-acre tract bought from an uncle a few years earlier with $250 of borrowed money and the understanding that he'd get the deed when and if he paid for the land. He paid it off in five years. "I had good credit," he says, "and wasn't afraid to use it. But you must remember that those were good years for farming."

He also did a lot of thinking about how a young farmer could make the most money on a small acreage. He shed no tears over the fact that he had only 68 acres. "I think the best way for a young man to start farming today," says Pullin, "is to do an intensive job on a small base of operations and branch out from there."

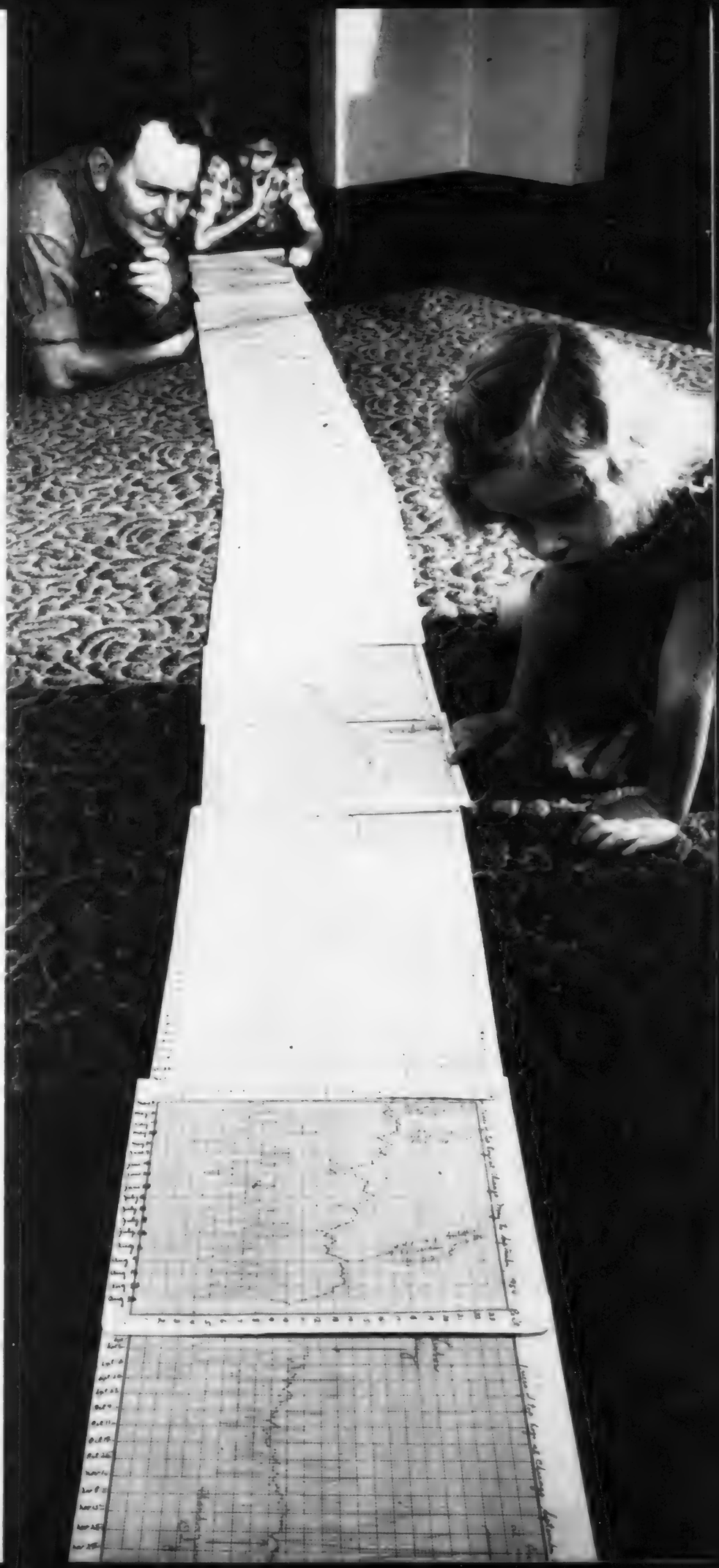
He decided early to buy feed and increase his livestock inventory to what his labor and equipment would carry. He has bought as much as 75 percent of his feed and steadily built up his profits. "I always knew I wanted livestock on the farm," he says, "to make farming a year around operation."

By 1952 Pullin needed more acreage to expand his growing hog enterprise. He had his eye on the 197 acre place up the road across from his father's farm. The neighborhood had long since given this farm up for lost. Corn yielded about 30 bushels per acre there and the combine sometimes passed up patches of wheat because it didn't pay to harvest them. The place needed major improvements, land clearing, draining and fertilizing, but Pullin saw possibilities in it.

He had an engineer survey it to see if it could be drained. "I wouldn't have a place I couldn't drain," he says. Then he slipped over before he bought it and took 37 soil samples. When he bought it, he already had fertilizer stored up for it and the following day he moved in to spread 1000 pounds per acre on the fields he could farm the first year. On the fields he put into soybeans he spread 400 pounds of 0-10-30. But it didn't stop there. He left a check plot without fertilizer and now the results are in his records. The results:

Yield with fertilizer	25½ bu.
Yield without fertilizer	16 bu.
Increase	9½ bu.
Value additional beans	$26.03
Cost of fertilizer per acre	$10.30
Net return per acre	$15.73

He also wanted to know what the same heavy fertilizer application would do for



Rabin Pullin (right) studies the ups and downs of the hog market with the help of his daughters and a set of charts he has kept for the past eight years. The heated farm shop (upper left) is shared with Pullin's closest friend and neighbor, Vernon Harrington.

beans on land that had seen better care. So he spread 400 pounds per acre of 0-10-30 on a plot of bean land on the home place in January, plowed it under in the spring as he did on the new farm, and later kept track of the yields. Here the extra fertilizer increased yields only three bushels per acre for a net loss of $1.78.

But the new farm needed much more than fertilizer. In less than two years Pullin dug a 3200 foot open ditch for drainage, put down 1100 feet of 14-inch tile, 2200 of 10-inch tile, and 17,000 feet of six inch. He built three miles of hog tight fence and cleared 40 acres of brush land. This gave him one field a half mile long except for a marshy spot near the middle. "I wasn't about to plow around that six-tenths of an acre in half mile rows," says Pullin. When it was dry in August, he had a bulldozer scrape the top soil off to the sides, filled the spot in with soil from the open ditches he was digging and pushed the top soil back in place. This, with his drainage, has weather-proofed the half mile field.

That first year the new farm produced 70 acres of 90 bushel corn. Last year with a total of 130 acres of corn on both places, his poorest corn yield was 92 bushels per acre through the picker. He has learned, by conducting tests and keeping records, that corn does best on his land when planted at 10-inch intervals in the row for a population of about 13,000 stalks per acre.

His most complete records, however, are on various phases of his hog business. There is no question in his mind, for instance, about whether he should keep gilts or old sows for breeding. He worked this out in his records in 1953.

In February of 1952 he sorted 100 gilts from his market hogs. From these he eventually saved 32 head for breeding. He kept a careful record of the income from the rest of the 100 gilts as they went to market. But what he wanted most to know was what happened to the value of the gilts kept for breeding. He recorded all the feed costs from the time they were sorted from the market hogs until they finished their farrowing duties. Here are the results as Pullin summarized them without showing pasture costs:

Original weight		23,420 lbs.
Original value		$4,215.60
Total weight sold		34,880 lbs.
Total value sold		$6,579.39
Total gain in weight		11,460 lbs.
Average selling weight		348.8 lbs.
Average selling value	Per head	65.79
Total feed for period		$1,818.98
Gain above original value plus feed		$544.80
Average selling price necessary for gain of sows to pay entire feed costs		17.35
Necessary selling price for last remaining sows in order to break even on entire operation		18.07
Average selling value	100 wt.	18.90

To Pullin this offers clear evidence that young sows are profitable sows. While they were carrying and raising pigs they also added $544.80 worth of meat over feed coasts. He keeps sows for only two litters. He always chooses them from the fall litters. This allows him time to take them off the self-feeders and give them a month's conditioning on ear corn before spring breeding starts. The month of gleaning grain in the fields toughens them and, as Pullin says, "Gives them a chance to get their feminine figures back."

Pullin's careful study of the hog market over the years reveals another big advantage in saving gilts only from hogs marketed in February. "There are definite cycles in pork prices," says Pullin. "The high point comes in July or August. By saving gilts from my February marketing when prices are lower and getting rid of them in the summer after two litters, I sell a higher percentage of my animals on the high markets. Over the years this is an important advantage."

Changing his sow herd every year also gives Pullin a tax advantage. He can count each crop of gilts as a capital investment, only half of which is taxable. "If I kept sows four years," he explains, "I would have that advantage only once in four years."

"But the most important reason for working with gilts," he adds, "is because they're young and vigorous and always growing. The gain in weight pays for the feed and you have the pigs for your at-

Hog feeding and watering are mechanized jobs on the Pullin farm. Continuous windmill operation keeps the water from freezing; tank heaters are used only on the coldest days.

Fertilizer, bought and handled in bulk, has been applied at rates up to 1000 pounds to the acre to boost corn yields from 30 bushels in some fields to an average of over 90.

tention. If you feed gilts," he says, glancing at his records, "there's no reason why you can't make them gain even though they're raising pigs."

For three years Pullin kept another simple record that showed him how to get an extra pig and a half per litter. He has no idea how many times this bit of bookwork has paid for itself. Across the top of this page in his record book Pullin wrote:

> "Comparison of results from pen-breeding gilts, one serving by boar vs. two servings on consecutive days. *1950 to 1953.*"* (see footnote.)

Pullin didn't have to brood long over this record to see that it pays to breed all his sows and gilts a second time on the following day.

He keeps four inbred boars for the job. Until last year he thought three boars were enough. "Until then I always thought bad boars came largely from poor management," says Pullin. He changed his mind when every gilt bred to one of his three boars failed to conceive, a fact he learned so late that it cut heavily into his crop of fall pigs.

He has since worked out a system that enables him to breed the bulk of his sows to his own tried boars. He buys boars in September, but doesn't use them until the spring breeding. Now, however, he breeds three marked sows to each of his new boars in the fall. "This way," he says, "I'll know if he's a breeder before he goes into the spring breeding program."

"September is a wonderful month to buy boars," says Pullin. "The bulk of the good boars are placed on the market in September and nearly all of them are sold for immediate service. I don't use these new boars until I start spring breeding, but I have to compete with the other buyers if I get good animals." Pullin's convinced, however, that these youngsters are not ready for work when he buys them in September. "He's a fine looking animal," Pullin says. "He's pretty. But he's like a high school boy all dressed up in Sunday clothes and he's not ready for a man's job yet."

To get him ready Pullin toughens him up for six months. "I never mistreat a boar," he says, "because I want them so we can work with them. But they're never pampered." By spring he wants vigorous, 350-pound boars. He also wants them older than his gilts, but if he kept them for more than two breeding seasons they'd get too heavy for gilts. So he buys new inbred boars each year and gets lighter animals and a complete change of strains.

Pullin also wants his sows vigorous. Right after they're bred in October, he runs them into the corn fields to spend the winter gleaning grain behind the picker. They get little other grain. Pullin figures the pickers leave 10 bushels of corn per acre. He watches his sows closely to see that they're not getting too fat.

Land leveling and tile drainage have converted crawfish land into high producing fields. Pullin did an intensive job on his original home farm of 68 acres before he expanded to his present 265 acres, all of which is tiled.

They have access to salt and a concentrated mineral which Pullin credits with clearing up trouble he once had with "downers." He also feeds a pound of protein a day to each sow while she's in the corn field.

"I let them get pretty hungry the last two months of pregnancy," he says. "I start feeding them a half to two-thirds pounds of ground alfalfa each about Christmas and I want them hungry enough to eat it. If they need additional grain they get a pound of whole oats a day." If they're still "awfully hungry" Pullin teases them with an ear of corn a day but he makes them walk for it. He doesn't know how he tells if they're awfully hungry. "I make the final decision myself," he says. "Keeping a sow thrifty and energetic all winter means good pigs with high livability."

When he breeds gilts in April for fall pigs there is still no pasture so they're hand fed ear corn once a day in moderate amounts. They also get a pound or two of oats and a half to three quarters of a pound of protein.

He feeds his sows for heavy milk production. Except for a few days of hand feeding after farrowing, his sows are on self-feeders where they can eat all they want of Pullin's special ration for lactating sows. Pullin has this ration jotted

(*Continued on page* 127)

*One Serving	1950	1951	1952	1953	Avg.
No. gilts bred	53	13	16	18	
No. gilts failed to conceive	18	6	10	6	
Pct. total bred (fail)	34%	46%	62%	33%	40%
Pigs farrowed per litter	8.1	10.0	8.8	8.5	
Two Servings	**1950**	**1951**	**1952**	**1953**	**Avg.**
No. gilts bred		46	47	45	
No. gilts failed to conceive		11	5	4	
Pct. total bred (fail)		24%	11%	9%	15%
Pigs farrowed per litter		10.3	9.8		10.0

Stilbestrol

This wonder drug is the bright hope of cattle feeders. An amount the size of a pin head can boost gains to more than three lbs. a day

By Chester Charles

ALTOGETHER it was a great day for visiting cattlemen at the Ames, Iowa, Feeders Day last spring. Bright overhead, firm underfoot and the prospect of more money in the bank through use of a new cattle growth stimulant—*stilbestrol,* a pure white powder which had set records with a pen of fattening steers at Iowa State College.

Now, after a year of stormy feedlot trials clouded with rumors as well as production and marketing problems, the atmosphere has cleared considerably. Stilbestrol has become the bright hope of feed dealers and cattle feeders alike.

As every farmer with at least one eye or one ear, or the ability to read braille knows by now, it didn't take long for stilbestrol to reach the crossroads feed dealer after its use in cattle feeds was accepted by federal officials last November. The benefits of stilbestrol, as well as its limitations, have been observed under practical feedlot conditions on thousands of farms already.

A little stilbestrol, like a little dynamite, packs a powerful wallop. Ten milligrams of the stuff, an amount the size of a pin head, has boosted gains in fattening steers to 3½ pounds a day. One ounce, sufficient to fortify the standard daily rations for 2800 steers, can produce well over an extra half ton of beef.

Results of the first Iowa tests with beef steers are widely known. Feeding the drug increased daily gains by as much as ⅓, total feed costs were cut down 1/5, and feed costs per pound of gain were reduced from 1 to 4 cents. Profit margin for the stilbestrol-fed steers was increased up to $22.00 per head more than the profit from check lot animals.

That spurt was enough to start the bandwagon careening along, with everybody trying for the front seat. Drug firms, college staffs and cattle feeders turned the race into a hassle. The drug was given widespread trial last summer and fall and its reputation fluctuated with each report. Before researchers had full opportunity to explore stilbestrol's possibilities, pressure to market the drug was on.

Many If's, And's & But's

No one yet knows all the answers to stilbestrol feeding. But progress to date has been sweeping, rapid and optimistic. How does it stimulate cattle gains? Nobody is certain. In most cases it promotes appetite, but not always. In some tests, stilbestrol has caused cattle to make better use of roughage, indicating that it aids the digestion of cellulose. Other tests seem to disprove this. Some think it effective only with ruminants; others are not sure. Because animals on the feed excrete less nitrogen and retain more in their bodies, stilbestrol is thought to cause more efficient use of protein. Stilbestrol in itself is not of nutritional value as protein is. It is not definitely known whether it stimulates the growth of rumen bacteria as urea does. It has none of the qualities of minerals. It doesn't improve the palatability of feeds, for it is tasteless. Nor is stilbestrol known to be directly related to unidentified growth factors as are vitamins and antibiotics. Just how it works is yet unsolved. But on one point scientists agree. They know that stilbestrol, if given in adequate quantities, can produce changes in the delicate balance of an animal's glandular activity.

For stilbestrol is a drug, not a feed-

stuff. It must be used with consideration for its medical potency. As a drug, its properties deserve at least a glance.

What Is It?

Hormones, the secretions of ductless glands like the thyroid, are essential to health. Certain hormones are closely related to sexual development and to secondary sexual differences, such as the growth of beards in men. In farm animals, as in human beings, milk production and other reproductive functions are in part regulated by the female sex hormones, one type of which is called estrogen. In medicine, processed estrogen hormones have been used for years in treatment of female disorders involved in pregnancy or menstruation.

Stilbestrol is a manufactured drug with all the properties of the natural female hormones. Doctors prescribe it with care. Though injections of several hundred milligrams may be given daily without harm, some human ailments respond to doses of one-half of a milligram, less than 1/56,000th of an ounce. A little goes a long way. That is why some understanding of its effects is important to farmers, to prevent its misuse.

Is It Safe?

Rumors, not entirely without foundation, have cropped up about men in drug manufacturing firms becoming sweater girls from handling pure stilbestrol. Under long exposure, stilbestrol can be taken into the system through respiration in sufficient amounts to cause glandular disturbances. The chemical can also be absorbed through unbroken skin. But when used in livestock feeds in the small quantities limited by law and when fed as recommended, stilbestrol has been pronounced free of health hazard to farmers and to meat consumers alike.

"Now wait a minute!" some of the meat inspectors are saying. "Testing for drugs in meat is an expensive, complicated affair. We can't test every animal slaughtered. And we can't control the amount of stilbestrol fed on farms. We don't know the effects the drug might have under different conditions, for instance, if fed to old dairy cows being fattened for market."

Donald Mackay of Carrol County, Illinois, believes such fears are unfounded. "Since last May," he says, "we've fed stilbestrol to almost 600 head of cattle, and never had any troubles of any kind, animal or human. My family and the tenants' families have been eating the meat for months. It's completely safe."

One Man's Meat

The difficulty with stilbestrol feeding is in controlling each animal's daily quota. Boss steers can be a problem. One solution is to mix stilbestrol-fortified supplements with ground shelled corn, as was done in the Iowa experiments. Ground cobs and molasses feeds are also being used as a base with the hormone supplements to give bulk for better distribution among animals.

Mackay, the Illinois feeder who raises white face cattle on his Montana ranch and brings them to his 860-acre home farm for finishing, self-feeds rations containing stilbestrol with no worry that the cattle will overdose themselves. He says: "We use self-feeders on both pasture and in dry lot. We like a high-molasses supplement, usually 20 per cent protein. The supplement, containing the stilbestrol, is mixed with the corn when we grind it. The whole batch is mixed again when it's augured out into the self-feeders from unloading wagons.

"I got permission to try stilbestrol on a lot of 650-pound Hereford feeders and started pouring the corn to them on alfalfa-brome pasture last May. There were 76 on stilbestrol, with 9 others carefully chosen for checks. We continued the same rations in dry lot except for giving them all the alfalfa-brome hay they wanted. How it happened is anybody's guess, but when we weighed them off pasture November 1, the 9 that didn't get the stilbestrol averaged about 25 pounds heavier than the cattle that got the stilbestrol. One thing may have had a lot to do with it—the stilbestrol-fed steers didn't have as easy access to water.

"On December 12, the stilbestrol-fed steers sold at an average weight of 1108 pounds. Both lots made high choice at $27.25 a hundred. The 9 steers that didn't get the hormone averaged 1.88 pounds gain a day in dry lot. Just adding stilbestrol to the ration shot the daily gains up to 3.06 pounds."

Other Enthusiasts

Steers on Robert Anderson's Atlantic, Iowa, farm also came through with colors flying. He put 33 head of 967 pounders on a daily ration of 10 pounds of ground ear corn mixed with 1 pound of 25 per cent supplement, plus free choice mixed

(*Continued on page* 114)

Good cattle on short term feeding with stilbestrol have made phenomenal gains at reduced feed costs. Some of the unanswered questions are: What will the poorer grades do; what is the effect on carcass grade; can stilbestrol be fed to other livestock; how can it be worked in with a high roughage program; is there danger in handling it?

the farmer takes a wife

By R. J. McGinnis

You can see that this Type I wife enjoys her work. Lucky is the young farmer who has tied up with this full-bosomed, wide-hipped creature, who will bear him strong sons and make a competent hand in the barn and fields when the pinch comes. A note of warning —there are signs of rebellion here—the fancy shirt, the well-kept hair, the Levis. She can easily develop into Type II, and should be intelligently and gently restrained.

WHEN A FARMER buys a cow he looks at her long and carefully, goes over her point by point, and weighs his pocketbook against her virtues and her faults. He should be no less calculating when he takes a wife. A young farmer, whose chief asset is ambition, should keep in mind that he will rise or fall on his choice of a wife.

This flint-hearted approach to taking a wife will appear to many, especially the female sex, as a way of saying that a wife should be regarded as a piece of farm equipment. That is quite right. We are going to be realistic about this, as every bachelor farmer should be, and not permit love or sentiment to becloud the issue. Few farmers can afford love these days. We can back up our judgment by the judgment of wiser men. The Talmud says, "In choosing a wife look down: in choosing a friend look up." An old Czech proverb advises the prospective husband to "choose your wife, not at a dance, but in the harvest field." And Karl Marx (perish his memory) came to the conclusion that "The bourgeois sees in his wife a mere instrument of production." Lord Chesterfield, speaking for the upper classes we presume, said, "To take a wife merely as an agreeable and rational companion will commonly be found to be a grand mistake." Cynics all, no doubt, but realistic.

Romance is only a minor consideration in selecting a farm wife. After all, a farmer can give only a very small part of his time to love, working as he does from sun to sun and then falling into bed dead tired after an early supper. What he should do is to appraise his prospective wife with all his wits about him, and leave love to the idle rich, or the sentimentalist. He will have no time for sentiment in his chosen profession, and besides, if he intends to make any money, he must have a helpmate who will hold up her end in making a fast buck quicker, and in thrift and hard work.

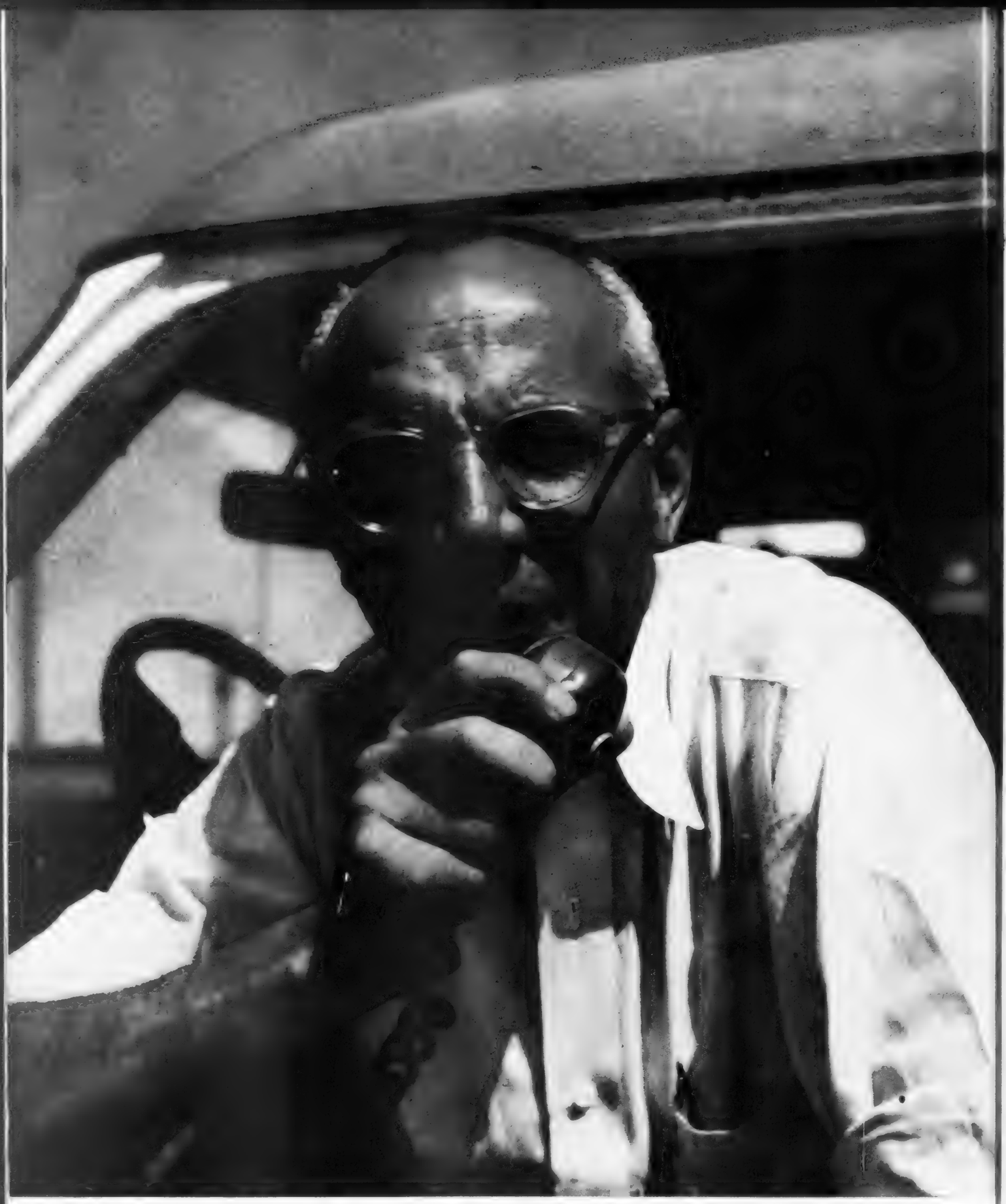
Most farmers, like their cousins in the city, use very slipshod methods in picking a wife. They could do no worse if they pulled a name out of a hat. The eligible bachelor farmer falls victim of a moonlight night, or a dulcet voice, or a sniff of My-Sin, never giving a thought as to whether or not the creature in his arms can strip a cow dry or hoist the back end of a wagon. The first female that wants him marches him to the altar. Like their city brothers, they fall for the perfumed butterfly, and marry her, and slowly repent. Farmers don't usually fall in love with the deep bosomed, wide hipped, somewhat unimaginative women who make the best farm wives.

How can an ambitious bachelor get the right girl? Our advice is for him to keep clearly in mind what an ideal farm wife should be, slyly canvas his girl friends, choose the one most nearly conforming to that ideal, and ask her for a date. She will take charge of the situation from there on. The thing to remember is *never* to have that first date with an undesirable candidate. In this way, he will eliminate the possibility of love complicating his problem, and blinding him, as it always does. He plays safe from the start.

After he has married her, love will likely come along, in the field while she is pitching hay up to him, or in the barn when she whacks Daisy for stepping on her foot. If love does not come along, so much the better: his life will be much simpler and

(Continued on page 94)

This is a Type II wife of the eager beaver subspecies. She wants to help, so she waters the tractor while her husband dallies over his second cup of coffee. He'll have to check if it's really water she's pouring and not gasoline, and odds are that she'll forget to put on the cap. The smug horse on the barn was her idea, you may be sure. She's on a diet now, for she knows she doesn't look her best in blue jeans.



This is Phil Larner, big business farmer, and manager of Sutter Basin's 12,000 acres of flat Sacramento Valley land. A Motorola radio-telephone hook-up puts his office on wheels and knits the field crews, office and shops into a smoothly-operating unit.

Grass in a Bag

A California rancher has come up with some exciting new ideas for feeding cattle and sheep

PHIL LARNER had one leg perched high on the fence at the edge of a 100-acre Ladino field. He was looking at a herd of 600-pound feeders, "Those cattle will get only half of the feed that was standing there when they went into that pasture two days ago." To make his point, he counted 20 out of the herd that were lying down, chewing contentedly as they squashed the high green plants. Some were concentrating on the job of grazing, but most of them were making deep green ruts in the Ladino as they sloshed along searching for the one most tender young bloom.

Phil Larner is vice-president and general manager of the Sutter Basin Corporation—a flat 12.000-acre ranch with 10.000 acres under irrigation near Sacramento, California. Like most Californians, he was born somewhere else. Larner came from Oklahoma when he was a boy of twelve. Tall, tanned, and soft-spoken, Phil Larner doesn't fit the popular conception of a ranch manager. Now in his late forties, he is the idea man, as well as th big boss of the spread. His radio-telephone equipped Ford ranch wagon is as much his office as the ranch headquarters in the town of Robbins. He can take the pulse of a combine as he drives along a lane. And, if it isn't right, he can tell the operator what to do about it. When you see Larner go to work on a problem, you realize that he is one of the original thinkers in the big business of big farming. His work in turning his grass into high-quality, easily-stored feed is a case in point.

"Out here in California we are in a continuous state of feed shortage," says Larner. "We have always paid some farmer to grow our grain, somebody else to store it and pack it, and then someone else to transport it to the West Coast. Several years ago I came to the conclusion that we could no longer afford to have cattle tramping down our irrigated pastures, sleeping on them, making them unpalatable by urinating on them. What we have done about eliminating this wasteful method of turning feed into beef and lamb with pastures and imported grain is contained in our setup over there. Before long we will be using no fields at all for pasture."

As he spoke, Larner waved his arm at two double columns of Harvestores, 26 big cylinders in all, tied together with a spider-web of conveyors. Their silhouettes loom from any part of the ranch, but you have to get close to them to realize the tremendous size of the "feed plant."

"We slaughter two million cattle a year in California, yet over a million of them are shipped in from outside the state. We raise less than half of the sheep and lambs that we eat. Like they say, California is the land of opportunity and in cattle and sheep the sky is the limit. And the only ceiling on the livestock program on a ranch is, 'How many can you feed?' "

Just how does a man get into this kind of a feed operation? Can he hope to come out on it? Larner says the answers are all tied to the idea:—high quality silage makes the best feed.

It all started back in 1952 when Larner read a bulletin detailing Purdue University's work with feeding silage. Larner was intrigued with the results. He hopped on a plane and went to see Dr. W. M. Beeson and Dr. T. W. Perry who had done the work. Their whole approach to the problem of lowering the cost of producing beef and lamb was based on the heavy feeding of farm-raised roughage. And roughage was just what Larner had the most of. The Purdue work had shown that a ton of beef could be produced from an acre of corn *if* the corn was fed as silage along with a daily supplement of 3.5 pounds. With the alfalfa and Ladino 1300 to 1700 pounds of beef could be produced from the first cutting *if* it was turned into grass silage and fed with a supplement. Purdue had developed

The feed mill is set in the middle of the irrigated Ladino fields. Twenty-four Harvestores are used. Two extra large ones store the grain. A dehydrator (lower right) controls the moisture content, before and after ensiling.

Photographs by
Joe Munroe

This strange machine throws up a continuous field dike to control the irrigation water; with one pass through the field it saves hours of hand work. It can build miles of dike in a day at a steady two miles an hour.

Tom Butler, "the right hand man," sights one of the combines to open up a wheat field.

There's a waiting line ready to eat the ensilage pellets at sheep camp five.

A field hand checks the depth of irrigation water in a Ladino field.

their own supplement, which they called "Supplement A."* With grain, about 500 pounds is a good average figure you can get in pounds of beef from an acre for a year. With hay, it is about 250 pounds.

The Purdue feeding results gave Larner the direction he wanted to go in his final objective of feeding 25,000 sheep and 10,000 cattle. He figured that was the feed production his land would support if he eliminated waste by feeding the cattle and sheep in lots on concrete. With irrigation and fertilizer applied for the biggest yields and with eight cuttings a year easily possible, Larner figured he had the set-up for producing this tremendous amount of feed.

But there are some mighty important differences between handling 6,000 acres of Ladino and alfalfa and handling the big Midwest farmer's 100-acre field. Like the fable of the sorcerer's apprentice, the first problem you run into is that you are apt to be swamped with the production you set going when you operate on this vast acreage. And once you set grass growing in California, it makes its growth to harvest stage at a predictable, but not a controllable speed. Getting big equipment was the first step, mechanical equipment that would handle tremendous amounts of green material at high speeds.

Larner had used trench silos, big ones that would store about 3,000 tons each. He wanted a better quality feed than he got out of them and he wanted to control the seepage. So he made a second stop in his trip in Milwaukee and bought 26 Harvestores, which were shipped to California to be assembled. These big, air-tight silos would handle the silage mechanically; each one had a built-in unloader.

For harvesting, Larner bought two *Field Queen* field choppers. One of these is shown in action on the cover of this issue. These choppers have a capacity of 100 tons a day and are self-propelled. The 8-foot cutter bar is ahead of the operator and is hydraulically controlled. The chopper has its own trailer that carries up to 6 tons, and it can unload the chopped material into a truck in about 5 minutes. No truck is needed to follow the field chopper and one man handles the whole operation.

The greater portion of the spring and summer of 1953 was required for assembling the silos and equipment into a synchronized unit. Twenty-four of the silos measure 17 feet in diameter and 40 feet in height and each of these has a capacity of 200 tons of silage. Two of the silos are 20 feet by 50 feet. The 24 silos are arranged in 4 rows of 6 each and the larger ones are at one side. The 2 larger silos were erected as air-tight bulk storage plants for dry materials. A combined capacity of 4,800 tons of silage is represented by the 24 silos. A normal clipping from alfalfa or Ladino clover is approximately 10 tons to the acre on Larner's operation and the 24 silos can hold the green material from one cutting of 480 acres.

Since the wilting of the green material before ensiling was not practical on such a large operation, Larner purchased a dehydrator of 70 dry tons per day capacity. This capacity is based on using material which contains 65 percent of moisture. Seventy tons of dehydrated material containing 10 percent of moisture can be produced every 24 hours. In the original plans, the dehydrator would be used to dehydrate green material. This dehydrated material would be added to the fresh green material in sufficient quantity to drop the overall moisture content of the green material blown into the Harvestores low enough that there would be no seepage of silage juice.

"However," says Larner, "when we got under way, moisture runoff did not prove to be too great a problem even when the fresh chopped material had no dry material added to it. So we put the dehydrator to work dehydrating silage and fresh green material for feeding to lambs or for sale to outside feeders who liked the analysis and needed the feed. We are making our basic pellet out of 57 percent dehydrated silage (about half and half Ladino and alfalfa). The silage has sodium metabisulfite metered onto it at the rate of 8 pounds per ton of green material. We like the Ladino because of its low fiber content. This balances off against the more fibrous alfalfa. To the silage is added 35 percent barley and 8 percent molasses. A typical analysis shows the pellets contain: moisture 4.3 percent, protein 16.2 percent, fat 4.8 percent, fiber 26.6 percent, ash 9.7 percent, and N. F. E. 38.4 percent. We've been selling the pellets for $50 to $60 a ton at our ranch. That's cheaper than $69 a ton for No. 2 corn and barley at $52 a ton out here."

Records of gains the lambs made indicate the feeding of a pellet containing barley, protein supplement and dehydrated silage was superior to feeding wet silage. And the pellets were better than feeding loose grain and protein supplement. Feeding fresh, chopped hay right from the field has its points, but you can only feed a limited amount this way, and no storage is possible. Running the fresh material through the dehydrator to reduce its moisture to 6 or 7 percent is done part of the time, but Larner likes the

(Continued on page 106)

*Purdue Cattle Supplement A

	Lbs.
Soybean meal	650.5
Molasses	140.0
Alfalfa meal[1]	140.0
Bonemeal	52.0
Salt with cobalt[2]	17.0
Vitamin A and D concentrate[3]	0.5
Total	1,000.0

[1]Dehydrated alfalfa meal (17% crude protein).
[2]One ounce of cobalt sulfate was added per 100 pounds of salt.
[3]Stabilized dry vitamin A and D concentrate containing 4,540,000 U.S.P. units vitamin A per pound and 567,500 U.S.P. units vitamin D per pound.

Why Irrigate

Lush pastures which will increase the hay crop by 75 per cent and milk production by 54 per cent are this farmer's answer to, "Why irrigate?"

IF A FARMER in the humid part of the country had the choice of increasing the size of his farm by a fourth or of adding an irrigation system, which should he choose? Today, many farmers, to stay in business and make a profit, must increase their crop production and thereby lower their cost per unit. This they can do by either piling more investment on their present acreage or by increasing the total number of acres they farm until they reach the maximum acreage they can handle with their present machinery and labor. To put it another way, they can either expand vertically or horizontally. Some farmers who have access to a supply of water are choosing irrigation in order to have a better farm rather than a bigger one.

These are the farmers who have kept books and have found that as they applied fertilizer and increased crop production, the cost of producing a bushel or ton or other unit of crop went down as yield went up, for cultivation and the harvesting costs were barely increased by the bigger crop. Now they see that irrigation will further increase the size of the crop and increase its value at a greater rate than the cost of irrigating—which means a further lowering of the unit cost. They also see in irrigation an insurance against disaster.

It is easy to see how irrigation serves as a disaster insurance, for where is there a farmer who hasn't had a crop ruined by drought? The extra profit from irrigation is less apparent in a normal year. But what is a normal year: how long is a drought? Agronomists generally agree that any two-week period without rain during the growing season will damage a crop. An idea as to the number of droughts which occur in the humid area is given by a study of weather conditions at Athens, Georgia, over a 65-year period. During this time, rainfall averaged 50 inches a year with February and July the high rainfall months, receiving five inches in each, and November the low month with 2½ inches. During the 65 years, the number of two-week droughts in the spring was 79, in summer 95, and in fall 112. During this same time, there were 17 four-week droughts in the spring, 7 in the summer, and 36 in the fall. Six-week dry spells numbered 5 for spring, 4 for summer, and 15 for fall. In other words, there was hardly a year in which irrigation wouldn't have helped in this country of unusually plentiful rainfall. A Michigan study showed that farmers could expect a dry spell of four continuous weeks every other year.

Fifty inches of rain, or even half that much, is plenty to produce a good crop, but only if it is there when the crop needs it. There are periods during the growth of most crops when they can stand a little drought, but there are other times when lack of moisture for only a few days cuts the yield dramatically. Corn, for example, needs a lot of water during the tasseling and silking stage if it is to make a good crop. Given plenty of water at this time, the yield will be abundant, even though it may be dry before and after. At Scotts Bluff, Nebraska, four years of experimenting with irrigation reveals the difference moisture at the right time makes. A field of corn given three irrigations, one ten days before tasseling, one at tasseling, and one at silking, yielded 143 bushels as compared to 69 bushels for unirrigated corn. As a further check on the importance of the time the crop gets the water, they gave one field three irrigations of equal amount—but all of them were before silking and none during silking. This field yielded 118 bushels or 25 bushels less than the field which had moisture when the crops wanted it most. Translating these findings into on-the-farm terms, a two-week drought at silking time can mean a loss of 25 bushels and lack of moisture over the tasseling and silking period can mean a loss of 84 bushels or, at today's prices, $126 an acre on corn land able to yield 110 bushels to the acre.

Corn isn't the only crop that pays off when it gets plenty of water at the right time. Pasture and meadow, watered after heavy grazing or after a hay crop has been taken, pay a handsome profit for the time and money spent. One five-year test on pasture showed that irrigated pasture gave a third more animal days of grazing and produced a fourth more animal gain than did the unirrigated pasture. In a Tennessee test, they found that pasture irrigation in 1951 and 1952 increased the cow days of grazing by 49 percent, milk production by 54 percent, and the dollar value of milk by 74 percent.

In Ohio, the best farmers can raise 400 bushels of potatoes to the acre without irrigation, but when they apply water, they can boost this to 750 bushels. In South Carolina last year, which was considered

(Continued on page 100)

Rain for Rent

RENTING an irrigation system to put water on crops may not be the cheapest way to get the job done, but it has saved many crops from total destruction and it has introduced supplementary irrigation to a lot of farmers. The idea of rental equipment struck farmers and equipment dealers at about the same time. The same idea occurred to a few custom operators who had bought equipment for their own farms and wanted to get their money out of it faster by keeping it in full operation.

One of the real problems facing the owner and the renter of the equipment is to figure out a rental schedule that will be fair to both. The difficulty is that every farm has its own problems and the system must be engineered to fit the farm if it is to do a good job. Some farms have soil and crop cover which will absorb water rapidly; some have heavy soils which have to be watered very slowly if it is to do any good; some have a water supply close to the fields to be irrigated; others require a long main line to get the water to the crops, which means not only more pipe but a bigger pump and a more powerful engine to run it. In searching for an answer, equipment owners have used just about every rental system in the book, which includes charging by the day, charging by the month, setting a price on an acre inch of water applied, and figuring a charge based on the power needed at the pump and the gallons per minute put through the sprinklers.

The farmer who has heavy clay soil that benefits most from a slow drizzle, but which has heavy runoff and soil washing during a downpour, would find a per inch charge to his advantage. To get the most out of irrigation, he would naturally insist on a very low rate of application, which means that the system would be tied up for a long period of time to cover his land. This same system of rental would also be the best one for the farmer who has a long haul from his water supply to the field, for it will take a bigger, more expensive system to do the job for him.

A farmer who owns well drained, sandy loam soil with a good crop cover can pour on as much as two inches of water an hour without damage. If he has much land to irrigate, it would pay him to rent the system by the day and work it around the clock to cover as much of his farm as possible in the shortest possible time. He may not come out ahead the first time he uses the system when he is still learning to use it and all his fingers are thumbs, but after he has learned some of the short-cuts, renting by the day will pay off.

The dealers who are trying to strike a ratio between the gallons pumped per minute and the power that it takes to pump them, hope to come up with a pricing system that will be completely fair to both parties. So far, none of them have figured out a system which is fool-proof.

What Will It Cost?

When the different systems of figuring rental are reduced to dollars and cents, there are still a wide variety of prices being charged. Systems are renting for anywhere from $5 to $50 for a one-inch application of water, but there are good reasons for some of this spread. The higher prices are being charged for watering small, high value crops where a whole system may be moved onto the farm and set up to water an acre or less. In northern Kentucky, S. W. Eichholz is charging $25 an acre inch or $40 for two inches to water tobacco which has one of the most rigid acreage allotments of any crop. This is a custom operator job and labor is thrown in with the equipment for the fee.

"We bought our system a couple of years ago," Eichholz said, "and as soon as some of my Boone County neighbors saw the results we were getting they got on to me to do some irrigating for them. We were watering a two-acre base on our own farm along with some pasture and another four and seven-tenths acres of tobacco on shares. With our outfit, which consists of a pump that will put out four hundred gallons a minute, fifteen hundred feet of four-inch pipe, and twenty-two sprinklers, we are able to water an acre and a half at a setting so we figured we could take on a few extra jobs and pay off a lot quicker the $2,600 the system cost. The reason we throw in our own labor is because we can make sure the equipment is used right and anyway we'd have to set it up for the customer and when you're watering only an acre or so, setting up is all the labor there is in it. Ordinarily, we'd put on an inch at an application, but last year the subsoil was so dry we put on two inches at a time —one for the immediate use and one to wet the subsoil and let the roots get down to the plow-down fertilizer. On our own place and on the farms that rented the equipment, all the water came from farm ponds.

"We watered our own tobacco four times at about ten-day intervals. None of the people who rented from us used the equipment that much. One of them had three applications, two of them had one application, and the rest had a couple during the season. We found that there was a wide difference in the ability of the soil to hold water even in this close neigh-

(Continued on page 119)

Complete irrigation systems can be rented in many parts of the country on a day rate charge or on the amount of water applied. Rental often includes labor.

Starting for $500

A small, deep pond can furnish water for a few acres of pasture and introduce a farmer to irrigation.

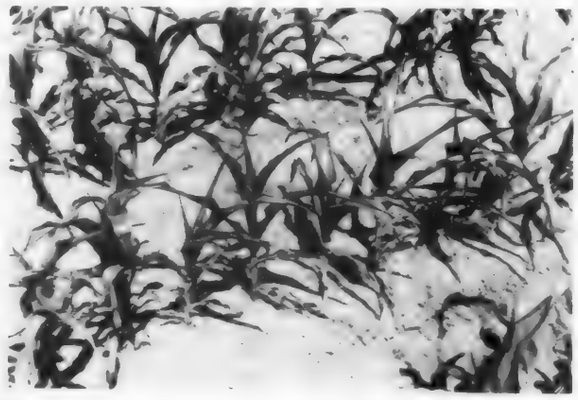
IRRIGATION SYSTEMS are tailored to fit the fields they are to water. Like a suit of clothes for a growing boy, they can be altered a bit to keep his wrists and ankles covered or even have a gusset put in if he is growing horizontally instead of vertically, but there is a point at which it is cheaper to buy a new suit than to try to stretch the old one further. Fortunately, with irrigation systems, when this point is reached, parts of the old system may be used in building the new or the whole thing can be turned in on the new model.

Roy Tribble, an irrigation engineer in the corn belt who designs systems for the Oldfield Equipment Company, believes that farmers who want to expand their irrigation systems might be put into three categories. "First is the man who wants to try out irrigation on a few acres, say less than ten, and later put in a system for the farm if he likes it. The second is the farmer who puts in a system on twenty acres and later wants to increase it to double or triple its size. We get a lot of customers like that. Finally, there is the man who buys a system to fit all the fields he thinks he will want to irrigate and later decides that he can profitably put water on a little more—say a twenty per cent increase. We can handle all three of these cases: that's what we're in business for, but they should be handled differently."

An example of the man Tribble calls an experimenter is Fred Ralphs who has a good, deep farm pond right in the middle of four acres of meadow. "To get more water and irrigate more land," Ralphs said when he ordered his equipment, "I'd have to drill a deep well and buy a lot of equipment. I'm not ready to put out that kind of money and I won't be until I've had a chance to work with irrigation and see if it pays off. Right now I want a system that will insure me a little pasture for my dairy herd in case we hit a dry year or increase my supply of hay if I don't have to pasture it. And I don't want to put out a penny more than I have to to get it."

When planning any irrigation system which is to grow, the first question is

Young corn can stand a leaf-curling thirst; at silking time, a drought can halve the yield.



The thirsty young corn resumes its growth when watered. Irrigated corn matures earlier and can be fertilized through the sprinkler system.

whether or not the pipe, pump, or sprinklers to be used in the small system can be used in the expanded outfit. Since Ralphs' plans may jump from 4 acres to over 100 and since he wanted his four-acre system at minimum cost, the answer is no. Just as with clothes, it would be cheaper to buy a new suit than to try to add cloth and make a midget's suit fit a heavy-weight. But with Ralphs' changeover he'll get credit for 70 to 80 per cent of the value of the old pipe and sprinklers and 60 to 70 per cent on the pump.

In designing Ralphs' system the plan was to sprinkle 12 inches of water on the land in six equal applications. The three-quarter acre pond held seven-acre feet of water which was just about right—taking into consideration the evaporation and seepage which would take place. Four hundred feet of two-inch aluminum pipe gave Ralphs a main line and one lateral with five sprinklers on it. The sprinklers were spaced at 40-foot intervals and the lateral was moved 60 feet between waterings. A small, two-inch pump powered by a two and one-half horsepower gasoline engine was selected to deliver the 60 gallons of water a minute which it takes to run the system. Pipe, sprinklers, pump, and such other items as a suction unit, elbows, and stabilizers ran the total bill up to $480.25. Ralphs' system could have been made still cheaper by eliminating the lateral and putting sprinklers on the main line. After he figured the labor involved in moving the pumping station every time he moved his sprinklers, Ralphs decided to put out the money for a lateral, which would permit him to make ten quick moves before he had to change the pumping station.

Salvage Operation

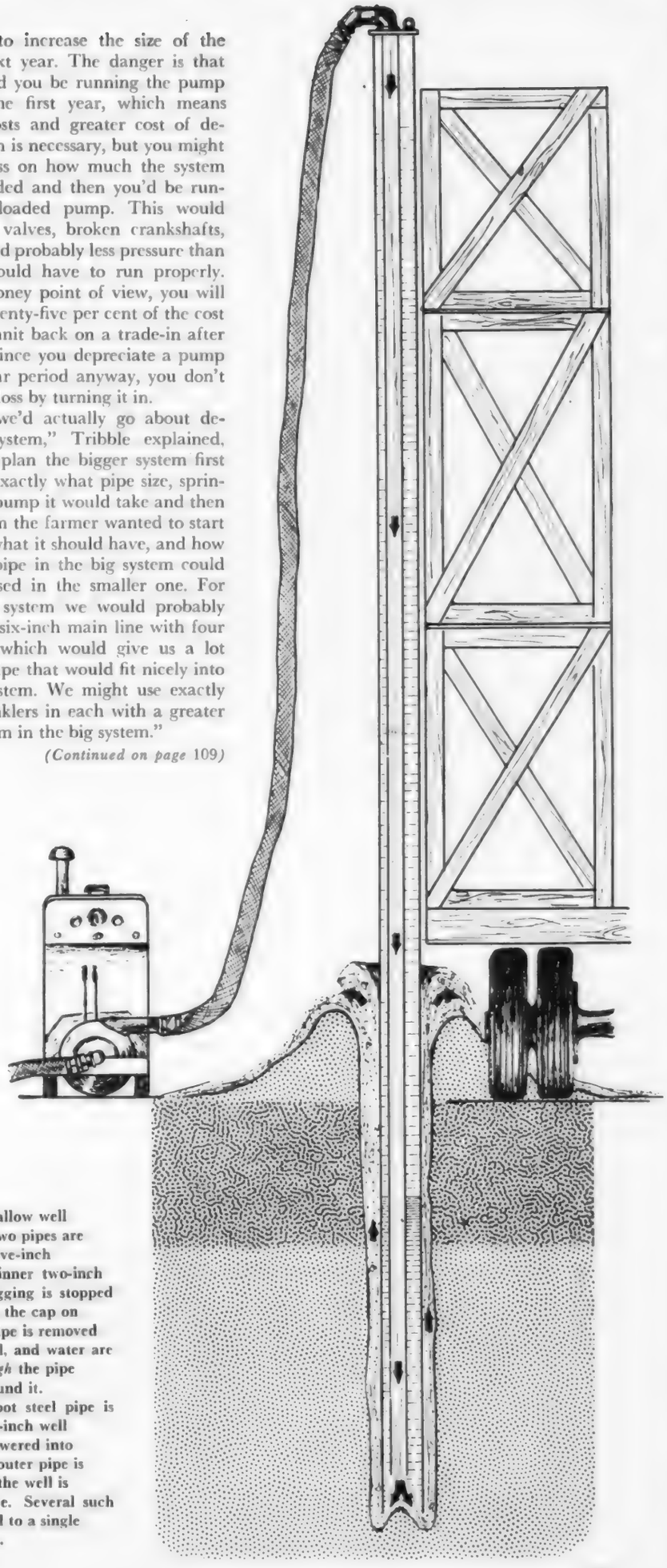
When it comes to designing an irrigation system for the second group Tribble described, the farmer who wants to start irrigating 20 acres and later build up the system to cover 40 or even 60, considerable more thought must be given to such items as pipe size. With care, pipe can be selected which will later fit into the bigger system.

"One of the things I'd want to know," Tribble said, "is just how soon the farmer plans to increase the size of the system. If he plans to run it for a year on twenty acres, for example, and jump to the bigger unit the next year, I think I'd recommend all four-inch pipe which could all be used in the bigger unit as laterals. If he didn't plan to increase the size of the unit for a few years, his best bet might be to have a four-inch main line with a couple of three-inch laterals. The three-inch pipe could be turned in on bigger stuff when he bought it. As for the pump, I think that I would recommend getting a pumping unit that was designed to fit the system being used and turn it in when the system was enlarged. You *might* use a pump that was overrated for the job if you planned to increase the size of the system the next year. The danger is that not only would you be running the pump inefficiently the first year, which means higher fuel costs and greater cost of depreciation than is necessary, but you might miss your guess on how much the system will be expanded and then you'd be running an overloaded pump. This would mean burned valves, broken crankshafts, faster wear, and probably less pressure than the system should have to run properly.

"From a money point of view, you will get around seventy-five per cent of the cost of the pump unit back on a trade-in after a year's use. Since you depreciate a pump over a five-year period anyway, you don't take too big a loss by turning it in.

"The way we'd actually go about designing the system," Tribble explained, "would be to plan the bigger system first and find out exactly what pipe size, sprinkler size, and pump it would take and then plan the system the farmer wanted to start with and see what it should have, and how much of the pipe in the big system could be properly used in the smaller one. For the sixty-acre system we would probably recommend a six-inch main line with four inch laterals, which would give us a lot of four-inch pipe that would fit nicely into the smaller system. We might use exactly the same sprinklers in each with a greater number of them in the big system."

(Continued on page 109)



Water digs a shallow well by jet action. Two pipes are used, an outer five-inch steel pipe and inner two-inch tube. If the digging is stopped by a hard layer, the cap on top of the big pipe is removed and sand, gravel, and water are forced up *through* the pipe rather than around it. When the 30-foot steel pipe is jetted in, a four-inch well casing can be lowered into place; then the outer pipe is jacked out and the well is ready to operate. Several such wells can be tied to a single irrigation pump.

Big Irrigator

Wendel Baker and his son-in-law, Bob Kearn, examine an immature potato plant with a seven-foot vine, pulled from an irrigated field. Baker claims irrigation improves the potato flavor and boosts the yield to over 500 bushels to the acre.

WENDEL BAKER has probably chalked up more sprinkler irrigation time and accumulated more experience with supplemental irrigation for field crops on his 230-acre farm at Urbana, Ohio, than any other farmer in the corn belt. His operation answers the question, "Doesn't it pay to irrigate a large acreage?" For 16 years he has been pumping water through his sprinkler system to produce two and three times the average national yield of potatoes on the 100 acres he plants to this crop.

During this time, the weather station at Urbana has recorded an average rainfall of 39.67 inches a year with June and July as the wettest months with an average of 4.08 inches and August averaging 3.64 inches. In spite of this pleasant distribution of rain, Baker says: "There hasn't been a single year since we started irrigating when we haven't watered at least once. And we don't go to all the work of irrigating unless we feel that it is profitable to do it."

Baker's farm is almost ideally situated for sprinkler irrigation. The Mad River, which has never been known to go dry, runs right down through the center of the farm. Baker has made the most of the situation by installing two separate systems, one on each side of the river. Each system is powered by a 260-horsepower industrial gasoline engine. He feels that there might be an advantage in powering these permanent pumping stations with electric motors, but was prevented from doing so because the power lines passing his farm wouldn't stand the load.

A permanent main line—Baker calls it a trunk line—of eight-inch asbestos cement pipe runs 75 rods into the fields from each pumping station. This trunk line is buried four feet deep and has valve-controlled outlets spaced at 80 feet along its length. From this trunk line, six-inch laterals are run out into the fields to do the actual sprinkling. On potatoes, Baker uses a medium-sized sprinkler which will water the crop at the rate of an inch of water every hour and three-quarters; with corn he uses semi-giant sprinklers with three-eighths-inch nozzles. "When we lay our line on the edge of the field between the corn and potatoes, we do use the big sprinklers on both crops," Baker said. "We can do this because we have 125 pounds of pressure behind the water, which breaks up the stream. With this pressure we might even be able to go into the great big sprinklers, but I think it would be rather risky. If one of the big fellows gets stuck, the jet of water can dig a hole in a potato field big enough to bury a horse in."

Baker uses his system 12 hours a day. In the evening at quitting time, the men lay out two laterals on each of the systems ready for the next day. At five a. m., Baker or his son-in-law, Bob Kearn, starts the pumps and lets the water run through one of the laterals on each of the trunk lines. When the men come to work at a quarter to seven, they shift the water into the second two laterals which they have ready and move the first to new ground. From then until quitting time, they are busy shifting the laterals and moving the water down the field.

A crew of three men with Baker or Kearn directing and lending a hand can move a lateral in about 45 minutes. When they are through watering with a lateral stretching north from the trunk line, they shift the water into one running to the south; then they start moving pipe. Each man can carry one section of the 30-foot pipe, though usually they make the work easier by teaming up and three men carrying two sections. When they get the 1,320-foot lateral laid they cross the river to the other system and lay out a second lateral. They usually get a fifteen-minute break after moving both laterals before they have to go back and start the cycle all over again. When they move the pipe from one end of the field to another or to a new field, they pile it on a farm wagon and haul it there by tractor.

Each lateral on the two systems waters two and a half acres every hour and 45 minutes which makes it possible for Baker to cover the 100 acres of potatoes in four days. If he is in a big rush he can run two laterals on the trunk line when the watering is being done close to the river where the pump doesn't have a long push to get the water to the sprinklers. "We could probably do the job a lot cheaper," Baker admits, "if we were to put on more water at a setting and irrigate less often. The risk is that you might put on all the water the soil can take and then get a heavy rain which will damage the crop. I'd rather spend the extra money and not take that chance."

In figuring costs, Baker estimates that he spends close to $2.75 for each acre inch

(Continued on page 101)

RAINMAKERS

. . . old and new

Sprinkler irrigation pipe curving around the contour of a hill pasture solves the problem of late summer grass. With 35 inches of rainfall, the corn belt farmer finds it profitable to pour on another 10 to 14 inches even in normal years. The fields of this irrigated Pennsylvania farm (below) stand out from the unirrigated land around it like an oasis.

This Navajo medicine man prays for rain to the Kachina Gods, painted in sand on his hogan floor. The best that can be said for the rainmaker is that he gives hope and courage to his people. Until the white man brought in irrigation, the Indian had to depend on the chance spacing of nine inches of rain for his pastures and corn fields.

The bird that lays the colored eggs is almost as strange looking as the eggs themselves. Originally this flock was started with a trio of Araucana chickens whose native home is Chile. Over the years, however, these birds have been crossed with every hen that laid an off-colored egg. Of the Araucana features, rumplessness still persists with some birds, though not with the old rooster on the right. The odd whiskers of the Araucana have evolved through cross breeding into the strange ruff on a bare, red neck with a top-knot of feathers around the comb. It is not surprising that some breeders feel there is a trace of turkey, grouse, and other unrelated blood in the genetic background of these birds.

The Hen that Lays the Easter Egg

By Grant Cannon

EVERY DAY is Easter Sunday for Arnold Wittenberg and his friend, U. S. Wirth, of Cedarburg, Wisconsin, for they have a flock of hens which lay varicolored eggs. These birds lay blue and green and pink eggs as well as an occasional white or brown one. They lay their rainbow assortment without dye in their feed—and their mothers were *not* frightened by the Easter bunny.

"The unusual shell color comes from the breeding and not the feeding. As you can see, they all eat regular chicken feed," said U. S. Wirth, who started the flock some ten years ago when he bought two hens and a rooster from Ward Brower, Jr., of Monroe, New York. Since buying his foundation stock, Wirth, who is one of the owners of a department store in Cedarburg, examines the eggs the store buys, searching out other chickens which lay off-color eggs. Whenever he finds an unusually colored egg, he traces the producer and, if possible, the hen which laid the sporty egg.

Wirth has added to the range of greens and developed some of the pink shades in this way. The blue shells are the heritage of the birds he bought from Brower, for blue eggs are the trade-mark of the Araucana chickens which Brower has been breeding since he first imported a trio from Chile twenty-eight years ago.

Just why the Araucana chicken, which is a native of Chile, has this odd ability is a matter of some conjecture. Some say that the Araucana is a descendent of chickens brought to Chile by the early Spanish. Some of these escaped into the jungle and mated with the native *Tinamon*, a wild bird of the partridge family. It was the *Tinamon*, they claim, which brought the blue color into the family heritage. Wirth, however, thinks that the Easter-egg chicken is a cross between grouse, pheasants, guinea hens, turkeys and chickens. Scientists, who have been systematically trying and regularly failing to produce a living cross between turkey and chicken, are sceptical about this theory. On his side of the argument, Wirth points to some of his roosters with their scarlet, featherless necks which look as though they either had a turkey in their genetic background or had had a serious brush with a mechanical feather picker.

Most of the scientists feel that the Araucana is simply a native chicken which lays blue eggs instead of brown and white. Colored eggs are most common in the bird world. One scholar, Professor Carl Sauer, the geographer, has used the Araucana to support his theory that there were migrations of people across the Pacific in ancient times. He believes that this bird must be related to an obscure Malayan hen which is the only other chicken known to lay blue eggs.

In its original state, the Araucana, which is about the size of a small Leghorn, was usually rumpless (that is the hens and even the rooster lacked the normal up-standing tail feathers) and sported a flair of feathers high on the neck which looked like a set of Victorian side-burns. Since the introduction of other breeds of chickens into Chile, the pure Araucana has been diluted with blood from other breeds. The birds which Brower, the New York importer, received, were the result of a two-year search by a Chilian hatcheryman, Juan Sierra Z. And even after this long search, Sierra was unable to find pure bred Araucanas. The birds which he shipped to New York obviously had some Dominique, Rhode Island Red, and Barred Rock blood in them. They did have whiskers, however, and were rumpless.

During their first year in this country, the rooster and one of the hens died and Brower was left with one hen and one chick, which was hatched from the only fertile egg laid by the two hens during the year. Fortunately, the chick developed into a vigorous rooster which, when mated with the old hen, fathered a whole flock of Araucanas. At first the birds laid perfectly normal, white eggs. By breeding for the Araucana traits, however, Brower soon had a rumpless, whiskered bird which was laying a blue egg.

While Brower selected and refined his flock until he had bred out what is probably the purest Araucana flock in captivity, Wirth crossed his birds with everything which laid an odd colored egg. Wirth and his friend, Wittenberg, now have one of the strangest conglomerations of feathered and semi-nude birds ever seen. They have, for example, both tailed and rumpless birds and some with feathered necks and others with necks which have the wattled texture of turkey necks, but with scarlet skin and a patch of feathers where an Adam's apple would be on other animals, plus a scrawny crest of feathers on top of the head. None of the birds have retained the true Araucana whiskers, but several have neck feathers which stand out as though the chicken was in a state of perpetual fright. The birds range in color from white, buff, and red to a strange little hen with blue feathers flecked with gold.

The eggs which the hens lay are almost as varied as the chickens themselves. The eggs range from a deep blue through green, and green mottled with brown, to a deep brown, and finally a pale pink. Wirth has found the color of the pullet eggs is usually paler than the eggs of the mature hen. But though the shade of an individual hen's eggs may darken with maturity, the base color remains the same. A hen which starts out laying a blue egg always lays a blue, and the pullets which begin laying pink eggs lay pink all of their lives.

Though none of the hens would win an egg laying contest, they lay a golden egg. Ten dollars an egg is not unheard of for hatching-eggs sold to hobbyists and a breeding trio sells for as much as $150 a bird. At these prices Araucana eggs can hardly compete with a ten-cent packet of vegetable dye. And regardless of price and color their beauty is only shell-deep for once you have opened the egg, it looks and tastes just like any other hen's egg.

But the appearance of the inside of the egg is just as deceiving as the shell color, according to Ward Brower. From the outside, the egg might look as though it had been laid by a giant robin and from the inside as though a common barnyard hen had laid it and that its food value would be the same as any egg's. Brower feels that this is an example of how deceptive looks can be. The Araucana egg, he claims, has marvelous medicinal qualities capable of healing troubles of the heart (functional troubles, that is, not romantic), stomach, kidneys, and lungs. And to top it all off, he says that one Araucana egg, or Health Egg as he now calls them, makes a splendid two-egg cake.

Chemical Warfare

By Roger Gish

IN SALT LAKE CITY a grateful people have erected a monument to the sea gulls and placed it within a few rods of their temple. It would not be there if the Mormons who farmed this land a hundred years ago had been able to use the agricultural chemicals which we have today. In the bleak year of 1848, the entire Mormon settlement faced starvation because hordes of crickets moved across the pioneer farms and gardens, leaving not so much as a blade of grass behind them. At the height of the devastation, after the Mormons had failed to stop the plague with flails, water-filled ditches and fire barriers, they were saved by the miracle of the sea gulls. Huge flocks of gulls, thousands of the gray-and-white birds, flew in from the islands of Great Salt Lake and gorged themselves on the crickets until the avalanche of insects had been destroyed. Today, the miracle of modern chemistry has supplied us with weapons which would stop such an attack at the first sign of crop damage.

In the past few years, chemistry has been added to a mechanical agriculture in the form of fertilizers to boost crop yields, weed and insect sprays to protect crops, and parasite and fungus treatments to insure animal and plant health. In 15 years, yields of crops have risen 28 per cent and the animal yields 13 per cent. During this period the use of fertilizers has tripled and the use of agricultural chemicals has increased ten times. More and more specialized chemical compounds have been discovered to do particular jobs until, today, one of the problems of the farmer is to select the right chemical to do the particular job of protecting his growing crops against disease, insect attacks, weed competition, and the prevention of damage to his harvested crops in storage.

Protecting the Seed

The seed is the beginning of the crop, but to germinate and put out vigorous growth the seed and the young plant must escape or overcome hundreds of diseases. Some of these infecting agents will be on the seed covering itself and some in the soil from which it must draw its nourishment. As with every living thing, the seed and the young plant depends for its survival on its inherited vigor and resistance to disease. We bolster this mysterious will to live with chemical protection. The chemicals which are used to treat the seed act as barriers between the seed and the fungus, bacteria, and insects of the soil; they also destroy the disease-causing organisms on the seed coating and they are used in the soil itself to create a healthier environment for the young plant.

One of the first chemicals used to cleanse the seed of disease carriers was formaldehyde, used as a 2 per cent solution dip and later as a dust to protect the seed and the crop against mildew, black smut and other seed-born diseases. Later, copper compounds, red copper oxide and copper carbonates, were found to be effective. Now, the organic mercury compounds, sold under such names as Ceresan, Semesan, and Mersolite, as well as other organics such as Dow 9B and Arasan, have been added to the farmer's arsenal. These he can use as dusts, dips, or slurrys to treat the wheat, oats and barley seed he saves himself or buys from a neighbor. He should insist that seed he buys commercially be cleaned and treated before he gets it.

Soybeans are subject to several diseases, but as yet they haven't caused enough damage to be considered economically important. Though soybeans are usually not chemically treated, they should be cleaned and inoculated with a slurry or liquid containing nodule-forming bacteria. These microscopic organisms help the plant take nitrogen from the air and store it in nodules on the roots. They are usually present in the soil, but adding a fresh, vigorous batch to the coating of the seed helps enormously.

The treatment of seed corn is left to the hybrid producer who keeps up with the latest chemical treatments. At present, most of the corn is being treated with lindane, an insecticide, and arsan, an organic fungicide, to give double protection. This treatment costs around 35 cents a bushel or 7 cents an acre, and has been shown to increase the yield by as much as 10 per cent by protecting against seed decay, seedling blight, wireworm damage, seed-corn maggot injury, and fungus rots.

Seed treatment will do a good job of getting the plant started, but in heavily infested soils more protection is needed against the soil bandits. Fire was the first soil sterilizer used by farmers in an effort to burn out their enemies. It is still used in some tobacco-growing areas where logs and brush are burned on the plant bed to kill the nematodes. Farmers have also tried boiling these worm-like pests and cooking them with live steam, but chemicals are proving far more effective. Until recently soil fumigation was considered too expensive for anything larger than a greenhouse

or a tobacco seed bed. Newer, more effective and cheaper chemicals, however, are making it possible to bring back infested land into profitable production. Ethylene dibromide, methyl bromide and chloropenes are used extensively as fumigants and some farmers are finding it profitable to use small amounts of potent aldrin or dieldrin with their starter fertilizer to put a stop to insect damage. Another way to reduce the cost of fumigation has been discovered by scientists who found that the costly fumigants could be absorbed by vermiculite—a heat-exploded mica which is made up of 27,000,000 particles to the pound. It was found that the impregnated vermiculite would spread the fumigant over a large area and slow down the fuming action to get a better nematode kill.

Protecting the Growing Plant

Once the plant has begun its growth it is still subject to attack from some 50,000 diseases which have been catalogued and studied, and from a host of insect enemies. The first fungicide used to protect plants against disease was discovered quite by accident a little over 70 years ago. When French grape growers found that their profits were being consumed by travelers, who saw no harm in pilfering a few bunches of grapes, they retaliated by dousing the rows along the highway with verdigris (copper acetate) and with a mixture of lime and copper sulphate to give the fruit the appearance of having been poisoned. It was soon found that the farmers were not only protecting their grapes against theft, but were also saving the vines from the mildew which was defoliating the plants further away from the road. A refinement of their poisonous-looking spray gave us the famous Bordeaux Mixture. Since then, copper-lime sprays and dusts as well as sulphur and lime-sulphur mixtures have been used to control scab, mildew and other fruit and vegetable diseases. The newer chemicals which are now taking the place of these old stand-bys are the dithiocarbamates and the chloroquinones.

Man's first attacks on the insect pests which plagued his crops were based on the theory that materials which were distasteful to man would be equally distasteful to the bugs. They therefore concocted horrible mixtures of dung, urine, ashes, rotten scraps of decaying matter and dumped them on the plants. They had little success until some who had tried chewing the new weed brought from America by Raleigh began including tobacco water and ground-up tobacco leaves in their insecticides and found that the nicotine definitely discouraged plant lice, aphids, red spiders and other insects.

Until it was discovered in 1868 that paris green, the first arsenical, would kill the potato beetle, the farmer's only method of fighting this pest was to go through his fields knocking the bugs into a can of water and drowning them. A more expensive insecticide was added to the list about this same time when travelers reported that powdered derris root, which the natives of the Indian Archipelago used to poison fish for easy catching, was also an effective bug killer. Still another insecticide from plants, pyrethrum, was added with the importation of a powder made from a certain species of chrysanthemum from Dalmatia, which is now a part of Yugoslavia.

So important were these discoveries and so rapid was the advance in devising new chemical combinations that one of the leading American scientists, B. T. Galloway, was led to remark in 1896: "So phenomenal has been the progress in this direction that we are sometimes led to think that we have gone forward too fast, for in our intense desire to make the work thoroughly practical we have in many cases merely skimmed the surface, overlooking some of the most important fundamental questions involved."

The old-fashioned way, a burning brush spread across a plant bed, (top left) has been replaced by chemical fumigants cheap enough to use on large acreage. Spray planes (top right) flew more hours last year than all airlines in the country. Weeds and insects (right) cut down more of the farmer's crop than acreage allotments ever have. One mustard plant requires twice as much nitrogen, twice as much phosphorus, four times as much potash, and four times as much water as a well developed oat plant.

Three annual sprayings with 2,4-D will eliminate wild onion and wild garlic from Ladino, white clover, and grass pasture. The spraying will do some damage to the legumes and will reduce the carrying capacity for a few weeks.

These words sound almost prophetic today when we consider that one of the most important discoveries in the history of insecticides, the synthesizing of DDT, had been made in 1874 by a young German chemist, Othmar Zeidler, and was to go completely unnoticed until 1939, when a Swiss chemist and Nobel Prize winner, Paul Muller, made the same formulation and discovered its enormous potency as an insecticide.

The rediscovery of DDT was to insecticides what the discovery of hybrid vigor was to plant and animal breeders—an enormous advance in itself and a great stimulation to research along similar lines. DDT was found to be more potent, longer lasting, more effective against a greater number of insects, and less deadly to man and other warm-blooded animals than other insecticides in common use such as the arsenicals. It is not perfect, however. Its wide range as a bug killer includes many very useful insects and fails to include some of our worst pests such as the boll weevil, the Mexican bean beetle, the plum curculio, and some of the aphids. It also fell short of perfection in that a few survivors of the insects against which it *was* effective passed on their resistance to their offspring and developed resistant strains of bugs.

Given the clue that DDT, a chlorinated hydrocarbon, was enormously effective as an insecticide, chemists began formulating other chlorinated hydrocarbons and have developed new materials such as chlordane, toxaphene, methoxychlor, dieldrin, and DDD. These new insecticides have their own particular values since some of them are effective against insects not covered by DDT, some will kill DDT-resistant insects, and some are less toxic to man.

But DDT was not the only wartime discovery. The British found that the gamma isomer of benzene hexachloride was a very effective insecticide and the Germans developed the organic phosphates which includes the deadly but useful parathien.

With this armory of insect killers we are in a good position to protect the growing plant. The scourge of the South, the cotton boll weevil, has succumbed to dieldrin and aldren; the orchards of America use practically every insecticide and fungicide that has been developed in the battle over whether man or bug is to get the fruit.

Corn, the key crop of the midwest, is usually free of insect attack until it is near maturity, when the corn borer and the corn earworm do their damage. Then the high-carriage sprayers on their stilt-like legs roll through the fields and stop the damage with a pound and a half of DDT to the acre.

Last season, John H. Lilly, entomologist at Iowa State College, discovered that an even better job could be done against the corn borer with granulated insecticide. The insecticide, granulated to a little larger than a grain of sugar, is spread on the crop through a modified grain drill mounted on high clearance equipment. The grains of chemical fall into the whorls and leaf axils of the plant which are favorite hiding places for the pest.

In the last two years, however, corn did not have its usual insect-free early growth. In both years there were attacks by chinch bugs and army worms in parts of the corn belt. Farmers who went through the experience testify to the need for fast, effective action when the army worm begins to march. These worms hatch in June from eggs laid by a moth which flies in from the Gulf area. A real infestation of them consists of millions of worms with appetites like GI's in basic training. They eat everything in their path and travel mostly at night. Sometimes a farmer learns of their presence by looking out the window at breakfast time bug-eyed to see bare ground where a cornfield was when he went to bed.

There is an old belief that the army worm always travels in a northeast direction; actually, they will box the compass in search of food. When they enter a grain field, they leave only the straw standing. The worms start up the stem, eating their way leaf by leaf until they reach the grain head. There they march to the top of the head, clip each beard and then return to the base of the head and make their destruction complete by gnawing through the small node and letting the head fall to the ground.

If the corn is very young when the army worm attacks, it may be able to send up new growth just as it will if livestock nibble off the first leaves. If it is several inches tall, the terminal, growing bud is eaten and the plant is killed. Wheat and other grain is completely destroyed if the worms are not destroyed first. Airplanes or tractor sprayers can do a quick job of stopping the worm with two pounds of toxaphene or a half pound of aldrin or dieldrin to the acre.

Chinch bugs usually hatch in wheat or other small grain and move from there into the corn. Spraying a quarter pound of dieldrin to the acre in a band around the edge of the field will corral them.

Grasshoppers, too, were a pest in 1954, competing with the farmer as well as the spittle bug, clover leaf weevil, cutworm, and sweet clover weevil for the pasture crop. And it takes a good meadow to support a heavy infestation of grasshoppers,,

New insecticides have created a virtuous circle. These chemicals kill the insects that eat the crop that feeds the man who would be dead if the chemicals hadn't killed the insects that spread the disease that kill the man.

for when they reach the stage where there are 17 to a square yard they will be eating a ton a day for each acre they inhabit. These and their insect competitors can be wiped out with toxaphene, chlordane, dieldrin, or aldrin.

A revolutionary approach to the insect problem is the effort being made to develop chemicals which will give the plant or the animal the ability to kill the bug that bites it. The effort here is to find chemicals, systemics they are called, which will enter into the blood stream of the animal and the tissue of the plant making them poisonous to insects without destroying their value as human or animal food. As yet, no such chemical has been released for use on food or feed crops. Chemicals *have* been released for use on cotton and young, non-bearing, fruit trees. One of these chemicals, demeton, which goes under the trade name of Systox, is being used on cotton at the rate of one and a half pints to the acre. The diluted material is sprayed on the ground where the plant can absorb it into its blood stream to make every leaf poisonious to aphids and mites. One of the great advantages of the systemics is that useful insects which pollinate the plant are not harmed by it—only those bugs which bite the plant are bitten back.

Weeds

For centuries man has known how to sterilize the ground with chemicals so that no weed would grow in it—but then, neither would any other plant. It has only been in recent years that he has developed selective herbacides that would kill weeds and spare the crop. The best known of these, 2,4-D, is a killer of broad leaf plants, but less deadly to the narrow leaf plants of the grass family. This selectivity makes the chemical extremely valuable in killing such weeds as ragweed, pigweed, lambs-quarters, bindweed, morning glory, vetch, mustard, and others between the rows of corn and in the fields of grain. CIPC and DNOSBP, on the other hand, are rough on grasses, but safer to use with broad leaf plants such as cotton, peas, soybeans, and peanuts.

Speaking against weeds is about as necessary as speaking against evil or for good. There are some interesting facts, however, in a diatribe against these pests made recently by W. C. Shaw, of the Division of Weed Investigation of the U.S.D.A. "The average ragweed plant has a water requirement three times that of corn," he said. "One plant of common mustard requires twice as much nitrogen, twice as much phosphorus, four times as much potash, and four times as much water as a well-developed oat plant. The average cost of tillage on cultivated land is estimated at sixteen per cent of the value of the crop produced. One-half of the tillage required is due to the presence of weeds. This means that on each acre of cultivated land our farmers are losing at least eight per cent of the value of the products due to the presence of weeds."

In an effort to save some of the cost of needless cultivation, corn and sorghum growers are using the amine and ester salts of 2,4-D both as pre-emergence and post-emergence sprays. As a pre-emergence spray, the ester salt of 2,4-D can be used immediately after planting at the rather high rate of one and a half to two pounds of chemical in 20 gallons of water to the acre. A bad rain immediately after planting may carry the chemical down into the seedbed and injure the corn even on rea-

(Continued on page 128)

Chemicals are meticulously tested to discover whether they may be dangerous. A good rat is not necessarily a dead rat.

High Analysis

IN 1607 WHEN Captain John Smith and his band of hungry adventurers and farmers set foot on Virginia soil, a squirrel could have made his escape from them, clear to the mouth of the Mississippi, if need be, by leaping from one tree to another, and his feet would never have touched the earth. But the farmers wanted the space the trees occupied for planting their wheat, corn and oats: so the trees were cut down.

With the trees went the protection of the soil against erosion and a source of organic matter. And without the trees the soil slipped and slid into the streams and the winds, too, did their part in carrying it away.

We have learned now to keep the land from getting away from us. We know how to grow our organic matter and turn it into the soil; we can grow part of our nitrogen requirements with the right legumes; we have made the handling of manure an easier job and we are getting it back on the land. Fertilizer in bags, in solution, and in the form of gas is helping to put fertility back into the soil. Last year over 20 million tons of fertilizer in various forms was used by American farmers to aim for 125 bushel corn, 50 bushel wheat, and 5 tons of alfalfa to the acre. Even in the face of surpluses in many farm crops there is still a need for rebuilding and maintaining soil fertility and to obtain efficient production. Soil fertility is like money in the bank: we can draw on it when we need it. It can make the difference between a farm that produces a good living and one that puts its owner in the red, for it takes the same amount of plowing, planting, and cultivating to grow 25 bushels of corn to an acre as it does for 125 bushels.

In the last year the big news in the fertilizer business has been high analysis fertilizer. "High Analysis" is the scientist's way of saying "high power" and "high power" describes the American way of doing things. The net result of all the progress made in the fertilizer industry is to put the means for greatly increased efficiency and profit in the hands of the farmer. Some people say that more has been done for the farmer—fertilizer-wise—in the last five years than was done in the previous fifty years.

Agronomists have said for years that we were raising crops on a hand-to-mouth basis—just barely getting enough fertilizer into the soil to make a decent yield. They have said that we could put on an additional $1 worth of fertilizer and get back $5 in extra yield. And they have proved the point with test plots. But getting enough fertilizer on with old methods is not so simple.

Take Jake Tanner, who farms a quarter section near Rushville, Indiana. He is turning under 40 acres of sweet clover this spring. "That," says Jake, "had 150 pounds of 10-10-10 to the acre when I put it in last year. Now, I'm going to

The new fertilizers make it possible for the farmer to grow more on the same acreage with no increase in spreading, planting or labor costs

Fertilizer

By Fred Knoop

try to raise 125 bushel corn this year. The hybrid seed I use is good. I've seen that same seed go 153 bushels up at Lafayette when the rains came at the right time. But what I want to know is just where do I get the 100 pounds of nitrogen, 45 pounds of phosphorus, and 32 pounds of potash that my 125-bushel corn is going to take out of the field plus the extra that the soil takes up as it increases in richness? Some of my soil is pretty run down and needs more than just growing fertilizer, but I get so tied up with the regular planting and harvesting routine that I haven't time to go running around and around fields like a squirrel in a cage spreading fertilizer, trying to bring up my soil back to where it should be. I've got to try to do it as I go, at planting time.

"Sure, I band the fertilizer beside the seed with the corn planter. It runs on the sprockets that put on about 200 pounds of 3-12-12 to the acre. My score looks like this." Jake pulled out his notebook and pointed to the county agent's figures:

	N	Phos.	Potash
Needed for 125 bushel corn...	100	45	32
Supplied by clover and clover fertilizer	20	15	15
Supplied at planting time.....	6	24	24
Amt. I'm short, lbs.	74	6	OK

"I used to use a plow sole fertilizer attachment," says Jake, "and put down 10-10-10 at the time I plowed the ground in April. That thing worked pretty well; it put the fertilizer down where the roots could get it when the plants got going good, but if you ever had to plow a field fast like you do in early spring and had to jump off at the end of every second furrow and dump some fertilizer in the hopper, you'll know why I gave it up.

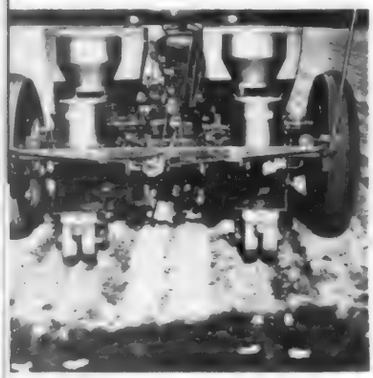
"So, I've still got a sizeable amount of nitrogen to get down for the corn to use. And if I'm going to build up the soil I need to put on about 50 pounds more of nitrogen, phosphorus and potash. I put on a side-dressing with each cultivation—this year it's going to be 12-12-12—and try to get all I need in the ground. But I still don't like to lift all those sacks."

There's an answer to Tanner's problem. This year there are new high analysis fertilizers coming on the market and new ways to get them into the soil, and farming is going to be a lot easier for Jake Tanner. High analysis fertilizer means fewer sacks to buy, to haul, to lift into the spreader, and fewer trips around the field.

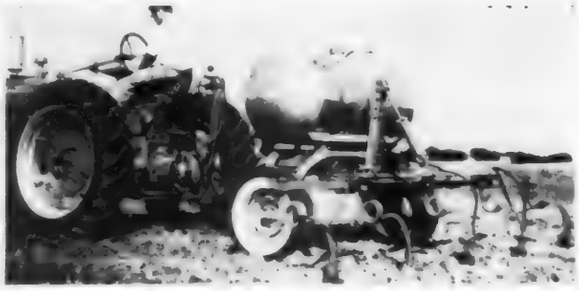
High analysis fertilizers have made it more important for the farmer to know what his soil is lacking in fertility and what his crop requirements are going to be. Being very frank about the whole situation, Dr. George Scarseth, Director of the American Farm Research Association, has this to say: "No farmer can guess what the soil fertility situations are in his fields. Farmers should use state soil testing laboratories if they are available. Another thing, nearly every farmer could use a soil

New ways to spread high analysis fertilizer

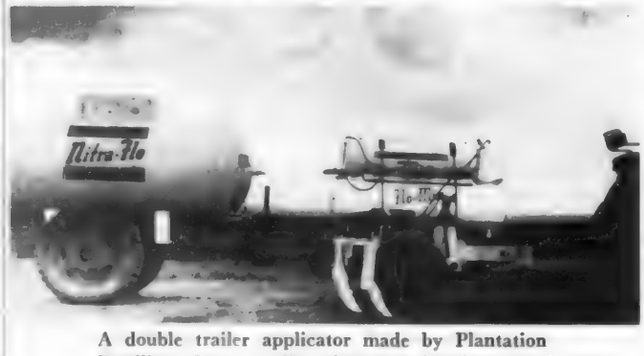
Soluble high analysis fertilizers (and lime too) can be spread while you irrigate with dissolving tanks like this one, the Fertileze Mixer.



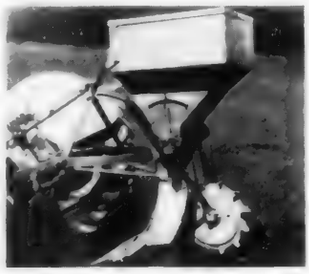
This Oliver planter bands fertilizer at two levels.



A trailer model Tryco anhydrous ammonia injector, equipped with an aluminum tank and hydraulic depth control.



A double trailer applicator made by Plantation Fertilizer Corp. applies nitrogen, phosphorus and potash in liquid forms, all in one pass at the field.



This subsoil breaker and fertilizer feeder has been developed by Pittsburg Forging Co.

Three separate hoppers of straight goods make the Gandrud spreader a fertilizer mixing plant on wheels. A grass seeder is mounted in front.

The Agi-sprayer keeps soluble fertilizers in solution and applies them in controlled amounts. It is made from materials that resist corrosion.

testing kit or a tissue testing kit themselves and work out the rough requirement schedule for their fields."

First, Test Your Soil

The first thing we should aim for in soil testing is to try to arrive at a reasonable working figure on what our soil contains in terms of the major plant food elements, nitrogen, phosphate and potash.

A good beginning is to check the soil for acidity. If this hasn't been done for five years, do it again. If the acidity is great, there is, of course, the danger that we may be running low on the element calcium and probably magnesium, too. If both are lacking, the shortage can be corrected by using dolomitic limestone. Dolomitic limestone contains both calcium and magnesium carbonate. We need not be very finicky about the amounts to add. On most soils about 2 tons every 5 or 6 years should be about right. A thousand pounds more or less may not make much difference; besides, limestone is not very expensive. The caution here is not to over-lime so that the soil becomes neutral or alkaline, because then you may have upset some other balance.

To find out what your soil has in available phosphate and potash, a systematic testing of the soil is necessary. In many states the Extension Services and farm organizations are setting up county soil testing laboratories through the County Extension Agents' offices to do this job. Specialists in this field also do this work on a private basis. Farm management services, cooperatives, and fertilizer companies usually can take on the job.

While soil tests for available phosphate and potash are not absolutely accurate, they are very helpful. The State Experiment Stations and Extension Services have worked out these tests to fit the soil of their states and their published results should be your guide.

Illinois farmers have led the way in knowing what their soils needed and then doing something about it. Every county in the state has its own farmer-financed and owned testing laboratory. A farmer can have soil samples taken by an expert or he can take the sample himself. After the samples are sent to the laboratory—and it will take about 10 samples for the average 40 acre field—the farmer can expect to get a report back in a week with a map showing an acidity check and phosphorus and potash available. The report also gives the recommended amounts of fertilizer for the various parts of the field.

(*Continued on page* 72)

A farmer can test his own soil with the kits that are available for farm use. The results are reasonably accurate and if a careful job is done can provide a guide for fertilizer applications. Most kits contain the equipment to do nitrogen, phosphorus and potash tests as well as the test for soil acidity which may indicate the need for lime. The most important precaution in their use is to be sure that all the test solutions are fresh.

Tissue testing, shown at the right, is done in the field, on the growing plant. It is not a substitute for soil testing, for a soil test shows the amount of plant food that is available for the plants to use. Tissue testing shows whether plants are getting enough plant food; it is a check on past management. The results can be used as a guide for future fertilizer application. If the crop is not too far along it can be side-dressed and the yield will be increased. The test here with nitrate powder shows a red color; this indicates that the corn is getting enough nitrogen.

Keep crops healthy and production high...

spray, feed and fertilirrigate

with N.C.I.

NATURE'S CROP INSURANCE

Is your crop feeding program keeping pace with your other modern farm practices? Efficient farming methods today make exceptional demands on all vital soil minerals, often depleting them faster than they are released by normal soil breakdown.

Assure crop health and yield *this season* with regular applications of high-analysis N.C.I. *Mineralized* Soluble Fertilizers. Complete 14-element N.C.I. formulas supply the three major elements in different combinations to fit every crop and soil need . . . *plus balanced quantities of all the known essential trace minerals.* By applying small amounts in immediately-available solution through modern spraying or irrigation equipment (see opposite page) you can avert sudden mid-season mineral deficiencies, or correct them *instantly* upon detection.

Why not protect your investment in machinery, labor and seed by feeding N.C.I. formulas *in solution* to foliage, roots and soil, either as a full season's fertilizer or for supplementary feeding? Being completely soluble and containing no filler, N.C.I. fertilizers are instantly effective and uniform in application . . . and you save on handling and storage. Packed in 50-lb. polyethylene-lined bags.

THE SIX N.C.I. COMPLETE-ANALYSIS FERTILIZERS

(Color tracers added for easy identification)

*ALL SIX N.C.I. FORMULAS contain the following amounts of essential trace minerals: SULPHUR (9.55%), MAGNESIUM (2.12%), CALCIUM (2.07%), MANGANESE (0.50%), IRON (0.20%), ZINC (0.10%), COPPER (0.07%), BORON (0.05%), COBALT (0.02%), IODINE (0.02%), MOLYBDENUM (0.01%). In blending two or more N.C.I. formulas for special feeding purposes, you maintain the original trace mineral balance.

For sixty-two Crystal Jewels

MALABAR-SUNNYHILL

TRACE MINERALS

MALABAR-SUNNYHILL Trace Minerals provide balanced, health-giving nutrition to your field and garden crops when used for supplementary feeding. Mix with your regular dry fertilizer or apply in solution through Agi-Sprayer or Flow Mixer (see opposite page). Packed in handy 50-lb. polyethylene-lined bags: RED LABEL for acid soils, BLUE LABEL for alkaline soils. Try a bag or two on your garden for the tastiest, best keeping, most nutritious vegetables you have ever grown!

MAIL COUPON ON OPPOSITE PAGE FOR DETAILED INFORMATION ABOUT THE USE OF THESE FORMULAS

HIGH ANALYSIS FERTILIZER

Continued from page 70

Soil testing kits are available in a wide range of prices, from $49.50 down to $12.50. Among the manufacturers of these kits are: Edwards Laboratories, Norwalk, Ohio; Lamotte Chemical Products, Towson, Md.; Purdue University Agronomy Dept., Lafayette, Ind.; Sudbury Laboratory, South Sudbury, Mass.; Urbana Laboratories, Urbana, Ill. The heavy steel cases that the better kits are fitted into are rugged enough to take field work and make them a good long-time investment. The cheaper ones contain the barest essentials, while the more expensive ones enable the farmer to do a more scientific job. Naturally they can not be expected to take the place of the complete equipment that a soil laboratory can set up in a permanent location. The kits will enable the farmer to check the soil acidity, nitrogen, phosphorus and potash in the soil with reasonable accuracy if he has some talent for detail and following directions. The great advantage of soil testing kits for the farmer is that he is able to run the tests when he wants and have a quick check on his soil condition. What he lacks in having *highly accurate information* is made up for by having *some* information. And in a number of states the soil testing laboratory is so overloaded with work that a whole season slips by without the farmer getting the analysis of his soil samples.

Selecting the Samples

Soil samples should be taken wherever there is an indication that there might be a variation in soil. If a plot of land has been growing the same crop, producing quite uniform results, and lies quite level, perhaps one soil test in the middle of the plot is sufficient. However, samples should be taken wherever there is a change in elevation of the land, or in places where crops have not done well.

Authorities disagree on the depth that you should go for a soil sample, but usually two to three inches under the surface will get a fairly accurate sample. Be careful not to touch the sample with your hands (it's best to wear gloves), or put it into any container which might contaminate it.

Probably the most satisfactory methods of gathering soil samples are with a soil tube, auger or trowel. Use a number of clean jelly glasses or paper bags which have been numbered.

Cigarette ashes will sometimes change a test, so it is better not to smoke while working with soil testing equipment. Also, it is well to keep test tubes corked until the test is complete, for some of the solutions are sensitive to reaction from the air. Don't take soil samples when the ground is wet: a good rule to follow is: if it's too wet to plow, it's too wet to take soil samples.

Another type of testing that will guide the farmer in his fertilizer check-up is

(*Continued on page 83*)

spraying and fertilizing lab . . .

the all-purpose, true-proportioning

FERTILEZE AGI-SPRAYER

Here is the most versatile tank sprayer ever built!

The simple, revolutionary AGI-SPRAYER now permits you to apply soluble and liquid materials *anywhere* . . . to soil, roots and foliage . . . as well as to areas not accessible to *any other equipment*. Even *non-soluble materials* once considered "unsprayable"— such as hydrated lime and grass seed—can be sprayed uniformly and economically!

The AGI-SPRAYER applies plant foods and other "sprayables" together or separately in their most effective state — with *water*—at a rate of 5 to 8 acres per hour. Turn a single valve and the unit is instantly converted for tree-spraying or sub-irrigation and root feeding. Using N.C.I. soluble formulas the AGI-SPRAYER is the most flexible, easiest-to-operate fertilizing unit on the market.

Inside the AGI-SPRAYER, five powerful *Hydra-hose* agitators maintain constant and violent turbulence, assuring thorough mixing and accurate proportioning. *The first gallon of any solution or mixture is substantially the same as the last.* There are no mechanical parts, no seals nor bearings to get out of order. Three tank sizes, 100-gallon, 500-gallon and 1,000-gallon, are available.

The time and labor you save with the multi-purpose AGI-SPRAYER will enable you to take *better* care of your crops at *less cost* . . . and enjoy a greater return from your efforts!

triples the value of your sprinkler irrigation system!

FERTILEZE FLOW MIXER

Make your pressure irrigation system *three times more useful!* Install the efficient FLOW MIXER on your farm. Operated by powerful *Hydra-hose* agitation, this low-cost fertilirrigation unit thoroughly mixes and applies all soluble and liquid fertilizers, hydrated lime, insecticides, weed-killers, etc. Used with N.C.I. Soluble Fertilizers the FLOW MIXER instantly restores minerals commonly depleted by intensive irrigation.

The FLOW MIXER is fool-proof in operation, has no moving mechanical parts. It operates with *any* portable or permanent irrigation system, large or small, using either a centrifugal or deep well turbine pump. Installation is simple, operation is strictly a one-man set-up.

If your crops respond to irrigation, they'll *thrive* on *fertil-irrigation!*

WRITE FOR COMPLETE INFORMATION ABOUT THESE NEW SCIENTIFIC FARM UNITS TODAY!

NUTRITIONAL CONCENTRATES, INC., New Lexington, Ohio

I am interested in:

- ☐ NCI Soluble Mineralized Fertilizers
- ☐ MALABAR-SUNNYHILL TRACE MINERALS
- ☐ The FERTILEZE AGI-SPRAYER
- ☐ The FERTILEZE FARM FLOW MIXER

NAME .....

ADDRESS .....

CITY ..... STATE

B.F.Goodrich
Power-Grip tractor tires

"HOLD BETTER IN ALL TYPES OF SOIL"

Arley Christiansen uses 4 tractors, 6 trucks and 2 cars in running his 6,130-acre farm near Levant, Kansas. The tractors are used for such jobs as hauling disc plows, rod weeders (shown at right with Christiansen) and grain drills. "By golly, I like 'em," Christiansen says about B. F. Goodrich Power-Grip tractor tires, adding that there is "practically no slippage and they wear longer."

Power-Grip cleats are longer and higher, have a bigger face area to press against the soil. They take a bigger bite, grip the soil for full traction in reverse or forward. Power-Grip shoulders are square cut to defy slippage. Power-Grip tires work faster, save fuel.

"Boy, I sure love 'em"— That's what Hans Tennigkeit (above, left, with son, Don) says about B. F. Goodrich Power-Grip tractor tires. He likes the greater traction Power-Grip tires give on his hilly, 126-acre farm near Persia, Iowa. No other tire is wider than Power-Grip. Time after time you'll find that in the same size, no other tire has more cleats. Power-Grip is bigger all around—bigger cleats and bigger shoulders—to do a better job for you.

Low-cost Super Hi-Cleat wears longer— Albert Peterson of Irvington, Nebraska, (above) has used Super Hi-Cleat tractor tires for 3 years, reports they are hardly worn. If you want a low-cost, longer-wearing tractor tire, choose the B. F. Goodrich Super Hi-Cleat. See your B. F. Goodrich retailer. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B. F. Goodrich Co., Tire & Equipment Div., Akron 18, Ohio.*

Phosphate Rock Makes the Difference!

ON WELL-KNOWN MURCHISON RANCH, near Pearsall, Texas, mesquite brushland, like that shown above, left, is being converted into first-class pasture and cropland. AA QUALITY Finely-Ground Phosphate Rock was the only plant food used in producing the excellent stand of Buffel Grass, above, right, on what was formerly brushland. Try some Rock on your farm—see how economical and profitable it is!

Try Phosphate Rock on Your Farm

FROM New England to Texas, stockmen and dairy farmers report exceptional results with finely-ground Phosphate Rock, in building and maintaining the high phosphorus level which is the key to profitable yields of digestible nutrients at lowest cost.

Yields of up to 141 bu. corn per acre, 12½ tons Atlas sorgo on 1st cutting, 81 bu. oats per acre, and mesquite brushland converted to excellent pasture—that, for example, is what AA QUALITY Ground Phosphate Rock is helping produce for T. F. Murchison Company, of San Antonio, Texas. Dr. Arnold W. Klemme, one of the nation's outstanding Agronomists, and Director of Agricultural Research for the T. F. Murchison Co., says:

"Field results on the Murchison Ranch, near Pearsall, Texas, show that ground phosphate rock can be used to correct phosphate deficiencies on both acid and alkali soils. Our soils range in pH values generally between 6.8 and 7.5, and show a distinct phosphorus deficiency.

"We bring the phosphorus level up to the point of maximum yield by using 1000 lbs. per acre of AA QUALITY Ground Phosphate Rock, and find it both efficient and economical.

"The acid complex of the root systems of small grains, corn, cotton, and especially legumes such as alfalfa, clover and cow peas, permit utilization of the phosphorus in phosphate rock by these plants.

"Phosphate Rock can be used most advantageously to correct phosphorus deficiencies in cropping systems where alfalfa or clovers are grown in the rotation, or in pastures where these legumes are grown with grass mixtures."

Try Some Rock on Your Farm

Today's intensive cropping removes more phosphorus than is put back in the soil by usual applications of superphosphate and mixed fertilizers. Crop results show that applying finely-ground Phosphate Rock, as an addition to the regular fertilizer program, is the low-cost way to rebuild and maintain an adequate supply of soil phosphorus, on which the crops can draw as needed over a 6 to 8 year period.

Try some Rock and see for yourself how it pays its own way and helps increase returns from the fertilizers applied to feed the various crops in the rotation. Disk in a liberal application, 1000 to 2000 lbs. per acre. Worked in deeply, Rock promotes deeper root growth, builds a better soil by increasing organic matter and nitrogen, increases moisture-holding capacity.

Ask your nearby Agrico or A.A.C. Fertilizer Dealer for AA QUALITY Phosphate Rock—from our mines to your farm for real economy.

DR. ARNOLD W. KLEMME, well-known Agronomist (on leave from University of Missouri), Director of Agricultural Research for T. F. MURCHISON CO., San Antonio, Texas.

ROCK PAYS! Typical Results

SOUTH CAROLINA: "I disked 2000 lbs. AA QUALITY Ground Phosphate Rock per acre under part of my 1954 tobacco, then fertilized the entire crop with Agrico," says W. T. ATKINSON (left), Turbeville, S. C. "The Rock area grew off faster, matured earlier, was 6 to 8 in. taller. This tobacco was graded and sold separately and it brought $87.14 MORE per acre than the rest of the crop. What's more, the Rock provides a 5 to 6-year phosphate reserve."

MASSACHUSETTS: "In 1952, we topdressed half of a Ladino-Bromegrass seeding with 2000 lbs. per acre AA QUALITY Ground Phosphate Rock," says HARRY F. KOCH (right), Greenfield, Mass. "We didn't check the yields in 1953, but on checking the yields for 3 cuttings in '54, found that we got 1¼ tons MORE hay per acre, worth $29.50 extra, from the Rock area, a fine 2nd year return, and the Rock will pay extra returns for 5 or 6 years more."

MISSOURI: "In Spring '52 I had 6 acres of a 9-acre field covered with 1000 lbs. AA QUALITY Phosphate Rock per acre," says Joe Serck, of Bucceton, Mo. "To see how the Rock was paying, I checked my 1954 oat yield on this field, these oats having been fertilized with Agrico in Fall '53. I was pleased to find that the Rock area made me 10.2 bu. MORE oats, a nice 2nd year Rock profit, with 4 or 5 years more to come."

OHIO: "In Fall '53, I put 2000 lbs. per acre AA QUALITY Ground Phosphate Rock on 3 of 12 acres to go into wheat, fertilizing the entire field with Agrico at planting," says RAY EBY, New Madison, Ohio. "In July '54, we harvested $10.86 MORE wheat per acre from the Rock area, which paid $7.20 extra NET profit per acre, over and above one year's Rock cost (1/6th of the total Rock price, since this one Rock application will pay extra returns for 6 to 8 years)."

The AMERICAN AGRICULTURAL CHEMICAL Co.

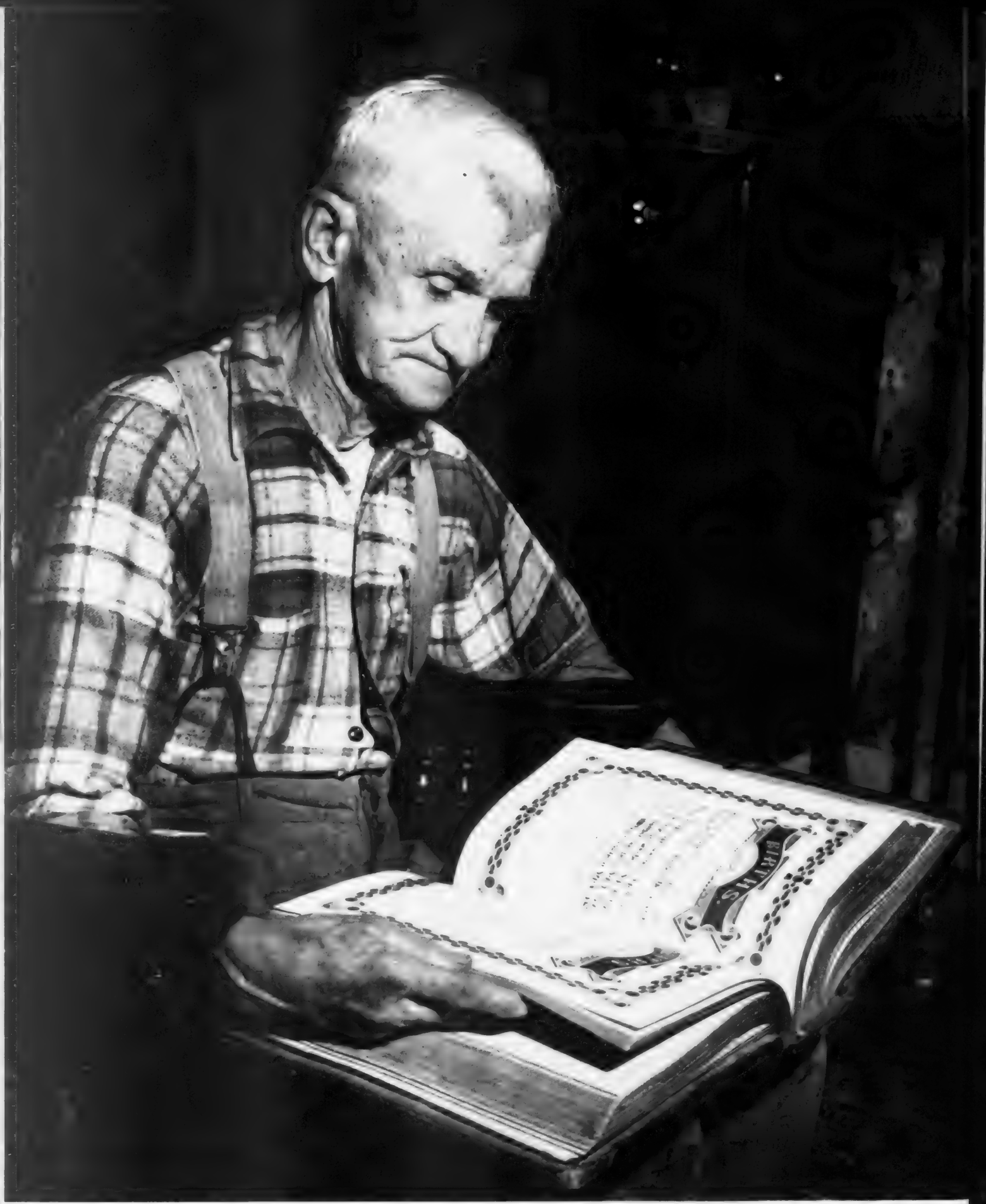
Alexandria, Va.
Baltimore 24
Buffalo 6
Cairo, Ohio
Carteret, N. J.
Charleston, S. C.
Cincinnati 17
Cleveland 11
Columbia, S. C.
Detroit 31
East St. Louis, Ill.
Fulton, Ill.
Greensboro, N. C.
Henderson, N. C.
Houlton, Maine
Laurel, Miss.
Montgomery 2, Ala.
New York 7, N. Y.
Norfolk 6, Va.
No. Weymouth, Mass.
Pensacola, Fla.
Phoenix, N. Y.
Pierce, Fla.
Saginaw, Mich.
Savannah, Ga.
Spartanburg, S. C.

FROM OUR MINES TO YOUR FARM →
FOR REAL ECONOMY, USE

AA Quality Phosphate Rock

FINELY-GROUND FLORIDA PEBBLE PHOSPHATE ROCK

Produced by the Makers of AGRICO®—The Nation's Leading Fertilizer and 18% NORMAL® Superphosphate



Jesse and Blanche wrote their names in the family Bible on their wedding day. In it they recorded births and deaths and they went to it often, to find solace for grief, and a promise of better things to come. "Folks don't read the Bible like they used to," says Jesse. "They'd be a lot better off if they did."

Span of Life

IT WAS SPRING and Jesse Metzger's bride was on her knees in the kitchen garden, setting onions. The rich, dark earth still held its winter chill and there was some old, tired snow on the north side of the gulley beyond the barn. But the sun was warm, and a few pink fingers of rhubarb had thrust up through the leaf mulch put on last fall. Mrs. Metzger was pushing the season a little, but onions could stand it, and fresh green things out of the garden were very good after a winter of salt pork and canned tomatoes.

When the wayward spring breeze shifted from the barn, she caught the ammonia tang of fresh manure and heard the regular thump of a pitchfork against the wooden sides of the gravel wagon. Her man was taking the last manure out of the feed lot, hauling it to the ten acres along the creek, where he would have corn this year. This would be their first year on their new farm. There were mortgages on the land and on the team, but they were young, this was their honeymoon, and they would raise a family here, pay off the debts, and lay something by. It was the year 1898, corn was 25 cents a bushel, and for 35 cents you could buy enough calico for a dress.

There were ninety-six acres in Jesse Metzger's farm. "It belonged to an old maid who had tenants on it for a good many years," says Jesse. "It was pretty well run down and I got it for $40 an acre. The house and barn were pretty good and it was only two miles from Felicity. There was a grocery at Felicity, two blacksmith shops, and our church. We belonged to the New Lite church. There ain't very many of them around any more. The New Lites just kind of dwindled away and we went over to the Methodists. As far as I can see, there isn't much difference."

Jesse had saved enough, working on his father's farm in neighboring Brown County, for the down payment on his farm and a few second-hand tools. He had a pretty good team of horses, a spike tooth A harrow, a breaking plow, a one-horse, two shovel cultivator, and an old wagon with a gravel bed, a hay rack and a grain bed. The grain bed, gravel bed, and the hay rack were interchangeable, and had to be lifted on and off for different jobs. Mrs. Metzger's parents gave her a cow with calf and a dozen hens and a rooster for a wedding present, and Jesse had a sow with a litter of eight pigs. They had a new cook stove. The remainder of their furniture was second-hand and gifts from relatives; they hauled it all over from Brown County in the grain wagon.

On the second Saturday after they moved in, Mrs. Metzger had saved six dozen eggs and two pounds of butter. She and Jesse drove to Felicity for their week's groceries and she sold the eggs for 54 cents and the butter for 45 cents. She took a dime of this and dropped it in an old sugar bowl on the top shelf of the kitchen cupboard. That was the way it was; you couldn't get ahead unless you saved a little. After 56 years of married life, the same sugar bowl is on the same shelf in the same cupboard in the same kitchen. It has never been quite empty.

The Business of Farming

That first year Jesse planted ten acres of corn by hand. He furrowed the field lengthwise, then crosswise, and hired a boy to drop three grains of corn in each hill; he followed and covered the corn with a hoe. He plowed it three times with his one-horse, two shovel plow, laying it by when it was arm-pit high. He had planted pumpkins in the corn and when he came to a vine across the row, he went out ahead of the horse and laid the vine along the row. It was hot in that cornfield in the July sun.

The tenant before him put in 20 acres of wheat. He had no binder, but he traded work with a neighbor, who cut the wheat. Jesse shocked it himself. His neighbor unhitched at supper time, but Jesse was far behind and he kept right on working until after dark, and finally had all the sheaves up and capped. His wheat was pretty good for those days, 18 bushels to the acre, and he got his first real money from the farm when he sold it for 80 cents a bushel, hauling it to a barge on the Ohio River, two miles away.

In July came the threshing ring. Jesse and Blanche, that's Mrs. Metzger, would get up early, do the feeding and have breakfast, and by the time the dew was off, they would be jolting over the country road. Blanche would get off at the house and join the other women in the kitchen, and Jesse would pick up a pitcher and put on his first load. There were eight of them in the ring, and that was eight moves, and eight big threshing dinners, and sweat and dust and coming home at darkness and doing the feeding and milking and falling into bed dead tired. But it was something to look forward to, the best time of the whole year. All the women worked and talked at the same time, and the men tried to outdo each other at the table, and bragged a lot about their hogs and their corn, and cussed the county commissioners because they neglected the roads and the bridges.

When the corn was cut and in the shock Jesse borrowed a one-horse drill and put the ten acres in wheat. He had traded work with a neighbor and with an extra hand who came out from Felicity every morning, he had got off his hay and his mow was full. Blanche helped him one day, loading the wagon while he pitched from the ground. She mowed it away, too. He hadn't liked her in the mow, for it was hot and dusty, but he did want to save all the hay he could. Sometimes he thought she worked harder than he did, for she had the cellar full of canned stuff, and had made ten gallons of sauerkraut, dried apples and corn, and when they butchered that year she worked late every night for a week, putting up sausage in jars, making scrapple, and pickling the feet and ears. She had done all the work in the garden and had a heap of food in the cellar she had raised herself, although Jesse did plow the potatoes once or twice.

"She didn't complain," says Jesse. "Women always worked like that—they didn't know any other way of living. They wouldn't do it today. Why, most of my neighbors don't have a garden any more. It's easier to buy cans at the grocery."

Fun Is Where You Find It

In September Jesse and Blanche spent the better part of a day at the Georgetown fair, the first time they had been away from the farm, except to go to Felicity to church, and for their weekly groceries. Blanche was very proud of a quilt she had made the winter before, and everybody said it was pretty enough to take a prize at the fair. She had sent it over by a neighbor, and she was anxious to see if she had won a prize. Sure enough, when she and Jesse walked into the pavilion, they saw the quilt display, and pinned to Blanche's quilt was a blue ribbon. She put the two dollars prize

money in her sugar bowl.

They met some of their old friends and kinfolk from Brown County and talked a lot and caught up on what had gone on since they left. At noontime Jesse watered his horse, gave him a sack of hay and three ears of corn out of the boot of the buggy, and he and Blanche took their basket of lunch and ate with some of their friends under a tree. In the afternoon Jesse bought a bag of hot peanuts and two cigars, which cost him a total of ten cents. Right after the balloon ascension he hitched up and they started the twenty-four-mile trip home. Old Daisy, who was more at home drawing a plow than a buggy, jogged slowly along, raising a lot of dust with her big feet. Blanche and Jesse felt tired and happy, and dozed a little from time to time. It was dark when they pulled into the barnyard and the feeding and milking had to be done, and supper prepared. It was 9:30 when everything was finished, and they went straight to bed. After all, they had been up since 4:30 that morning, and had driven 48 miles at a slow horse and buggy pace.

Day in and day out, it was toil, getting up by lamplight, doing the milking by lantern light after the day in the fields. How welcome was the rare recess from work, a part of a day when it rained, a whole day when the corn was laid by. One Saturday afternoon Jesse and four of his neighbors borrowed a seine and went down to the Ohio river and seined a backwater, bringing home a tub full of carp and catfish. He went hunting a time or two and once got so many rabbits that he and Blanche gave a rabbit supper. By this time they knew everybody in the neighborhood and waved at every passing buggy and wagon on the Felicity road that passed their farm. They had made some good friends and life was pretty wonderful and satisfying and full.

Jesse saved out ten bushels of his best wheat, and when it had dried out well, he and Blanche took it to the mill on Bullskin Creek to have it ground. The old stone buhrs turned out a fine dark flour. "Blanche made the best salt risin' bread in the county," says Jesse. "The stuff we buy now ain't got no body to it, and it ain't got no more flavor than a newspaper."

And Long Underwear for Both

When the days shortened and the first frosts came, work slackened in the fields, and Jesse and Blanche felt they had earned a day or two off, and besides, they needed some things for winter. A neighbor drove them down to the landing on the Ohio and they took the six o'clock boat to Cincinnati. It was a four-hour trip and they went to the Pioneer store and each got two suits of heavy underwear. Jesse bought a heavy pair of felt boots, with rubber soles, which cost him two dollars. Blanche got gingham and calico for two dresses. They ate lunch in a restaurant and took the horse car out to Blanche's sister in Mount Auburn, where they stayed the night. They talked about the trip all winter—it was quite a splurge for them, and both of them secretly wondered if they hadn't spent too much money, being in debt as they were. The whole trip cost them $12, including their purchases.

They went to church every Sunday and that winter they traded oyster suppers around the neighborhood. A half dozen families chipped in for a gallon of oysters, and the host furnished the milk and the crackers. They gathered at supper time on Saturday night, hitching their blanketed horses around the fence in the barnyard. The women spent most of the time in the kitchen; the men sat around the hot stove in the living room, smoking their Saturday night cigars and discussing a new check-row corn planter, which one of them had just bought, and the relative merits of William McKinley and William Jennings Bryan, the silver-tongued orator.

Right after Thanksgiving, Jesse loaded three fat hogs in his grain bed and he and Blanche hauled them over to the Parker farm where they had a butchering. Four families had teamed up and that day they killed, dressed, and hung 11 hogs. The 11 white carcasses hung in a row in the frosty moonlight, cooling out for the next day, when they would be cut up. The four families were on hand early the next morning, the sausage was stuffed, the lard rendered, and the offal trimmed and divided. Jesse took the sides, hams and shoulders and gave them a salt and sugar cure he had learned from his father. Blanche put up part of the sausage and pickled the feet and made scrapple. That was their meat for the year, barring an occasional chicken, or a piece of beef when a neighbor butchered a calf. That was the thing to do—put up your own meat. Butchering was as much of an occasion as threshing—not work at all, but fun.

Of Wages and Hired Hands

In those days you could hire a good farm hand for twenty dollars a month and keep. He worked from sun to sun when need be, and all day on Saturday, too, during haymaking and harvesting. Other times he wanted Saturday afternoon off, and feed and pasture for his horse. On Saturday afternoon he took off to Felicity,

Of all her wedding gifts, Blanche was proudest of her cow. Her Sunday dress was none too good for this portrait.

"This is my mother," says Blanche, and this cow is the mother of my cow. No, that's not Ma's milking dress."

Jesse got a colt out of his mare every year. He always kept a spare horse, and occasionally sold a two-year-old.

where he raced his horse up and down Main Street. Saturday night he went courtin', taking his girl to a church ice cream social, or, during the winter, to a revival meeting at a country church. He saved his money, bred his mare, and in four or five years had a team and enough money to buy some second-hand tools. Then he started on shares for himself. That was how Jesse got his start. Unless you inherited a farm, or married one, you started that way. It was hard work and self-denial for long years, but it was possible in those days.

A Brave New Century

A brave new century dawned and with it came a little war with Spain, the assassination of the President, and a stirring in the minds of men. The pioneer days were over and that explosive energy which had carried the American farmer across a continent was now turned to the arts of living, to making life easier.

Jesse and Blanche, with a son added to the family, took the first decades of the new century in stride. Changes and better things came slowly and imperceptibly, prices got a little better, sugar and coffee and winter underwear cost a little more, a two-row cornplanter came out and a two-horse cultivator, and hours in the field were cut down considerably. But these were little improvements in old familiar things, expected and accepted.

It was not until the Twenties that the accelerated pace of the new era began to push Jesse around. The din of gasoline tractors echoed across the fields to him, walking quietly behind his sweating team. At the blacksmith shop his neighbors disturbed him with talk about hybrid corn, which they said produced unheard

(*Continued on page* 121)

Jesse's first big venture in the machine era was a binder. "Never had any trouble with it," he says. "A little tinkering each season, but that's all. I know every bolt in it."

The Metzgers had their first ride in a horseless carriage at the Buffalo fair. The tickets cost a quarter, Jesse recalls.

That's Jesse, in the hat, with two neighbors, and a bag of rabbits. The Metzgers gave a rabbit supper.

"We'd been married about five years when Jesse bought a regular driving horse. That's me, on my way to church."

Look at the looks

Try the comfort

BUT to get the most for your money

LOOK UNDER THE HOOD!

Before you buy any truck . . . look for the engineering advancement that has revolutionized engine performance and gas savings in the last four years! Look for a modern *Short Stroke* engine design! Only Ford, the V-8 leader, makes four *Short Stroke V-8's* and one *Short Stroke Six* . . . immediately available!

When a new type of engine prolongs piston ring life as much as 53% it offers a promise of something extra special in many different ways.

Gas savings of up to 1 gallon in 7 and a reduction of up to 33% in engine friction wrap up that promise. Small wonder that the truck industry is now in process of investing millions of dollars, *under the hood* . . . in a revolutionary switch to Short Stroke V-8's.

It will pay you to *look under the hood*, because the big swing to modern *Short Stroke* engines is just getting under way . . . and many truck models will have old-type *long stroke* engines for some time to come.

It's easy to tell a modern Short Stroke engine from the long stroke engine of the past. The "stroke" is always as short or shorter than the "bore." This short "stroke" reduces piston travel up to 35% . . . increases piston ring life . . . reduces friction . . . increases usable power.

Under the hood of *every* Money-Maker Ford Truck for '55 . . . *without exception* . . . you'll find a modern Short Stroke engine! Only Ford offers a full line of Short Stroke engines . . . four V-8's and one Short Stroke Six.

There are no waits for Ford Short Stroke V-8's, or the Short Stroke Six.

Make sure your next truck is a modern money maker. Look *under the hood!* Go Short Stroke! Go Ford and you'll get the most thoroughly proved Short Stroke design, V-8 or Six, in any truck . . . bar none.

HERE'S HOW to tell if you're getting truck power that's on its way in, rather than on its way out. Look for a modern Short Stroke engine with a "stroke" that is as short or shorter than its "bore."

THREE big money-making opportunities with TRIPLE Economy

1. *Money-making power saves gas!* Only the Money-Maker Ford Trucks for '55 offer a full line of five modern, gas-saving, long-lived, Short Stroke engines.

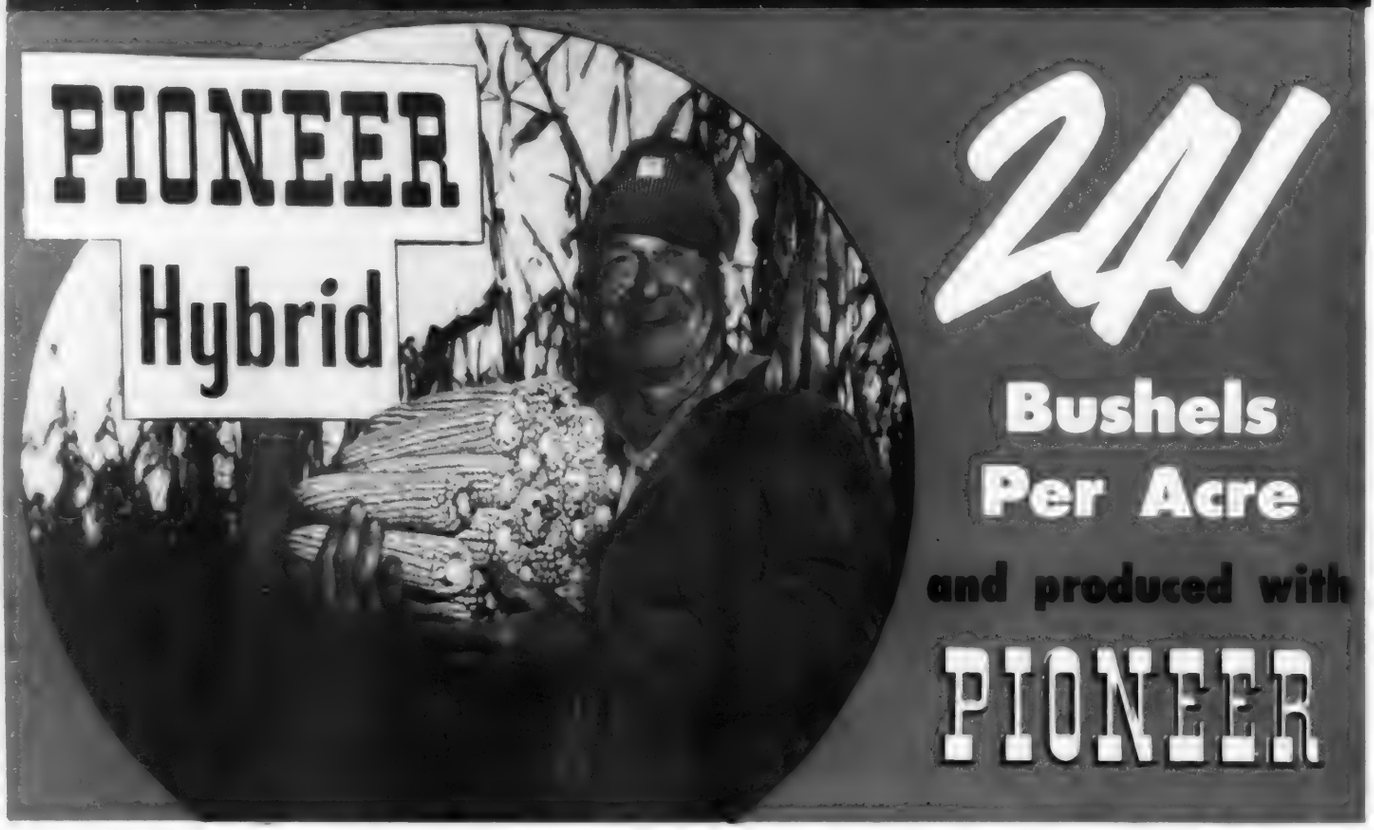
2. *Money-making convenience saves work!* Driverized cab . . . only Ford has it! Power Steering, Power Braking in Pick-ups, Fordomatic available at extra cost.

3. *Money-making capacity saves trips!* High-payload design in over 190 money-making Ford Truck combinations, including America's biggest capacity Pickup.

Ford Triple Economy Trucks

The MONEY MAKERS for '55

NEW WORLD'S RECORD*



A. J. Custer, Garrett, Indiana, Establishes All-Time Corn Yield Record in 1954 Official Indiana 5 Acre Corn Club Contest

The 40 year goal of Mr. A. J. Custer of Garrett, Indiana, was realized when his entry of PIONEER Hybrid Corn was declared the winner of the 1954 Official Indiana 5 Acre Corn Club Contest—with the previously unheard-of-yield of 241 bushels per acre.

In considering this NEW WORLD'S RECORD of 241 bushels per acre—please remember that this was an OFFICIAL CONTEST — conducted under the supervision of the Purdue University Agricultural Extension Department.

Neither the producers of PIONEER, nor any other private producer of hybrid seed corn had any connection with it. It was an open, unbiased contest on the basis of—"May the best cultural practices—and the best corn win."

And Mr. Custer did use the latest approved corn cultural practices—thick planting and extremely heavy applications of fertilizer.

Mr. Custer's truly phenomenal yield was achieved with regular, commercial varieties of PIONEER . . . the self same varieties being grown annually by thousands of farmers.

For TOP corn yields in official contests—or in farmers' fields—you just can't beat good, sound cultural practices — plus Good DEPENDABLE PIONEER Hybrid Seed Corn.

*As established in an official yield contest, December 15, 1954.

PIONEER Hybrid Seed Corn is produced by the following companies:

Garst & Thomas Hybrid Corn Co.
Coon Rapids, Iowa

Pioneer Hi-Bred Corn Co.
Des Moines, Iowa

Pioneer Hi-Bred Corn Co.
of Illinois; Princeton, Ill.

Pioneer Corn Co., Inc.
Tipton, Indiana

HIGH ANALYSIS FERTILIZER

(*Continued from page 72*)

tissue testing. The kits to run these tests are simple and inexpensive; they can be purchased for under $5.00. It is important to understand at the start that tissue testing is not a substitute for soil testing, but it is a good backstop to catch the ball after it has been pitched. This kind of testing is done after the crop is planted and growing. It is a check on past fertilizer practices and can be used to determine future management. The actual growing plant is cut and the juice tested. The way the juice responds to various color tests indicates shortages or adequate supplies of nitrogen, phosphorus and potash. Usually the crop can be side-dressed and the needed fertilizer supplied in time to make a considerable increase in the yield. One such kit is the Colorstrip Test Kit, made by Urbana Laboratories, Urbana, Illinois. (see page 136)

Soil and tissue testing requires care and probably the most important precaution in the use of kits is to be sure that the testing solutions are fresh. Some of the solutions can deteriorate in 30 days to the point that the test is almost worthless. Manufacturers of kits can supply fresh solutions, and it is a good idea to start out the spring with fresh replacements.

Nitrogen carrying fertilizers led off the parade of high analysis fertilizers five years ago. Today, anhydrous ammonia is available in many areas of the country. There are 82 pounds of nitrogen in each 100 pounds of the liquid ammonia gas. Anhydrous ammonia is handled as a liquid and it is kept under high pressure (200-250 pounds) until it is injected into the ground by tinelike applicators. Here it expands and becomes a gas with a nose-tingling bite that has the look of steam. With one trip over the field as much as 200 pounds of nitrogen can be applied per acre.

Ammonia injectors are made in tractor mounted models, hydraulic lift models and trailer models. Large farms have found it profitable to own their machines. Smaller farms can usually find custom operators who will apply ammonia 2 or 3 days ahead of planting time. Or it may be applied as a side-dressing on growing row crops.

Producers of anhydrous ammonia are: Allied Chemical and Dye Corp.; American Cyanamid Co.; Columbia-Southern Chemcal Corp.; Commercial Solvents Corp.; Deere and Company; Grace Chemical Co.; Mississippi Chemical Corp.; Olin Mathieson Corp.; Phillips Chemical Corp.; Lion Oil Company; Shell Chemical Corp. These companies generally ship ammonia in liquid form in tank cars to distributors. With a special tank trailer a farmer or custom operator can haul his ammonia from the distributor's storage tank directly to the edge of a field. To put it into a tank on the tractor, ready to apply, it is only necessary to valve it into the tractor tank with a high pressure hose and special fittings.

The direct application of anhydrous ammonia is quick, cheap, clean, and saves time and labor. With it, nitrogen enough for big crop yields can be put on without throwing the planting schedule out of kilter.

Like many good things, ammonia has some disadvantages. It is a high pressure material and it takes heavy tanks to store it and handle it. With all high pressure gas there is an element of danger in the pressure alone. That, plus the fact that ammonia is extremely caustic and can burn severely, make it necessary to use approved equipment and handle it with care.

Ammonia nitrogen has another quality which is somewhat a mixed blessing. The ammonia ions carry a positive electrical charge and when the injector shoots the gas into the soil, it stays put at the depth where it is discharged, for it is attracted, like a magnet attracts steel, to the negative clay ions in the soil. So it is necessary to place anhydrous ammonia at the depth at which the plant roots can reach it.

Ammonia gas has the advantage of being soluble in water and its first big use for direct fertilizer application was in ditch irrigated fields in the West. As one California farmer says, "This is about the nearest I'll ever come to spreading fertilizer from a rocking chair."

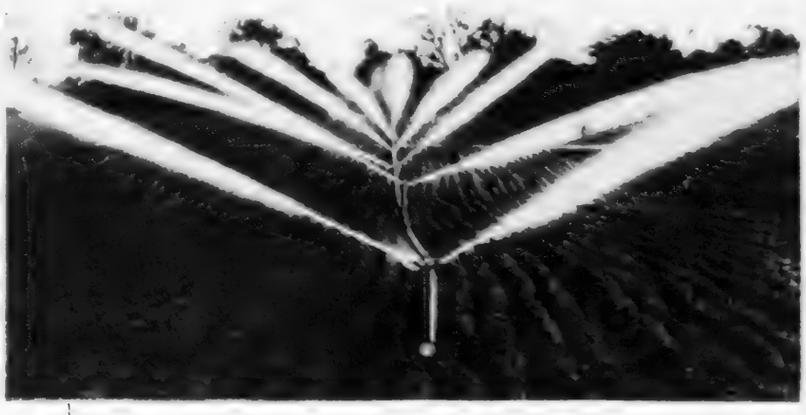
(*Continued on page 84*)

"Portable sprinkler irrigation helped us win 18 first place ribbons for top quality vegetables," says Merle Krause, Peoria, Illinois. "Portable irrigation is the only way you can meet competition and stay on top."

"Aluminum irrigation pipe is light and easy for me to handle," says Mrs. Andrew Kehrli, Jr., who serves as chief irrigator on 48 acres of irrigated dairy pasture on the Kehrli farm near St. Paul, Oregon.

"Portable sprinkler irrigation gives us uniform water distribution," says Frank F. Mead, Orange, California who uses it on 52 acres of oranges, 18 acres of lemons (60 more being planted) and 25 acres of pasture.

PORTABLE SPRINKLER IRRIGATION . . .



. . . Your Best Plan for Intensified Farming in 1955

Get crops off to an earlier start and benefit from an earlier harvest. A portable sprinkler irrigation system can make this possible. It will also increase yields, protect profits and increase income from the same acreage.

Don't delay until rainless days come. Having water when needed can make the difference between a loss or a profit in 1955.

PLAN FOR PROFIT IN 1955 . . . Contact your local dealer who handles strong, lightweight Reynolds Aluminum Irrigation Pipe. He'll plan and give you an estimate on a portable sprinkler irrigation system engineered to your particular requirements . . . a system that will help you plan production and farm more intensively.

This sign identifies dealers who sell Reynolds Aluminum Irrigation Pipe.

This label identifies Reynolds Aluminum Irrigation Pipe.

Member of the SPRINKLER IRRIGATION ASSOCIATION

REYNOLDS ALUMINUM

Reynolds Metals Company
2578 South Third Street, Louisville 1, Kentucky

Please send "More Income Per Acre", your new illustrated booklet on the applications and advantages of portable sprinkler irrigation.

Name_____

R.F.D. or Street_____

Town_____ State_____

Straight Goods

To supply nitrogen to the soil, we have the "straight goods" classifications, such as ammonium nitrate with 33 percent nitrogen available; ammonium sulfate with 21 percent nitrogen; nitrate of soda with 16 percent nitrogen; calcium cynamid with 21 percent nitrogen.

The supply of urea is now becoming more plentiful and it provides the highest nitrogen content in the bag fertilizer field, about 45 percent. Urea is one of the soluble fertilizers and it looks as if it has a great future. It is also used in feeds as a protein replacement.

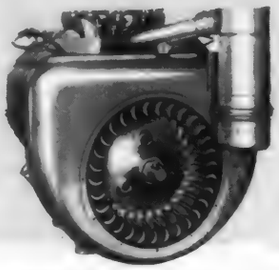
There are a number of liquid nitrogen solutions on the market today, available in most farm areas; they are made from ammonium nitrate and anhydrous ammonia; some contain urea. Their nitrogen content ranges from 20 to 41 percent. One brand sold in bulk in the Midwest, the Nitrana solutions made by Allied Chemical, range from 37 to 41 percent N. They are applied easily with the right tool; usually a series of tines that put the solution under the surface of the ground. These solutions are used for subsoil preplant and side-dressing applications. There are spray rigs made especially for spraying liquid fertilizers on pastures. The farmer can often use the spray equipment he uses for spraying insecticides if he uses aluminum or stainless steel nozzles and pumps. Or he can set up a gravity type injector on the back of his tractor for as little as $50. He can apply the solution at the time he cultivates his corn. In Indiana and Illinois, using solutions, a pound of nitrogen will cost a farmer 12 to 13 cents.

Phosphorus Carriers

Superphosphate, 18-20 percent available phosphorus, and triplesuperphosphate, 45 percent phosphate, are available in almost all farm communities. The expansion in the chemical field has been good for the farmer for there is more phosphorus available in these forms. Ammonium phosphate is a good high-analysis material in that it supplies 11 percent nitrogen along with 48 percent phosphate. In parts of the country where soil has been in cultivation over many years, phosphorus, along with nitrogen, is most often deficient. Phosphorus must be *right there* when the seed germinates so the tiny roots can reach it if the plant is to make a vigorous growth. Farmers have found that phosphorus will make a quick showing with growing crops in the early stages.

Potash was abundant in most of the soils of our country. It's the old story, though, of the man with only a dollar in his pocket leaning against the wall outside the bank. There are a million and one

Only WISCONSIN *Air-Cooling* GIVES YOU ALL THESE BENEFITS



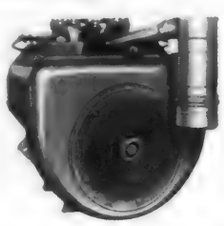
Open view of the powerful flywheel-fan on multi-cylinder models. Note depth and "scoop" design of fan blades . . . integrally cast as part of the flywheel. No delicate parts to invite damage.

AIR-COOLING, as supplied on ALL Wisconsin Heavy-Duty Engines, automatically takes care of all cooling problems, at all seasons of the year, at all operating temperatures up to 140° F., or extreme sub-zero temperatures. Nothing to freeze in cold weather, no hot-weather dryups. There is nothing for the operator to *forget* or *neglect* — no costly replacements because "someone forgot" to put water or anti-freeze in the radiator. It's fool-proof!

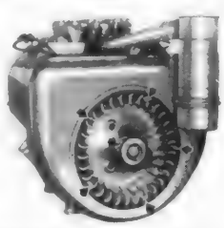
AIR-COOLING, as compared with water-cooling, prevents engine failures and expensive replacements caused by heavy deposits of alkali in the radiator, water jackets and heads . . . in those areas where alkali is a serious water problem.

AIR-COOLING, as supplied on ALL Wisconsin Engines, is handled efficiently by ONE SIMPLE CASTING . . . actually the flywheel itself, of which the powerful fan is an integral part, working in perfect co-ordination with scientifically designed cooling fins cast into the cylinder block and head, and carefully engineered air baffles in the shrouding.

WISCONSIN ENGINE AIR-COOLING provides trouble-free cooling *even under extremely dirty field conditions,* when engine is equipped with our specially designed, self-cleaning ROTATING SCREEN which is available as optional original equipment.



Specially Designed Self-Cleaning ROTATING SCREEN over flywheel-fan intake opening, mounted directly on flywheel. Centrifugal force automatically throws off straw, hay, weeds or other trash that may come in contact with screen during field operation of equipment. Prevents clogging of fan, cooling fins and shrouding baffles. Rotating screen supplied as optional equipment when specified on factory orders.



Flywheel-fan showing simple, foolproof method of mounting Rotating Screen by means of stud bolts anchored in flywheel. Crankshaft collar provides snug closure at center without interfering with manual cranking.

Power TO FIT THE JOB

Power TO FIT THE MACHINE

These are just a few of the reasons why it pays to specify "Wisconsin Heavy-Duty Air-Cooled Engine Power" for your mechanized equipment. You not only get the *most power service* with the least *servicing* but you also get dependable "Lugging Power" that keeps the job moving when the going is tough. Write for Bulletin S-164, with specifications covering the full line of Wisconsin Engines, 3 to 36 hp.

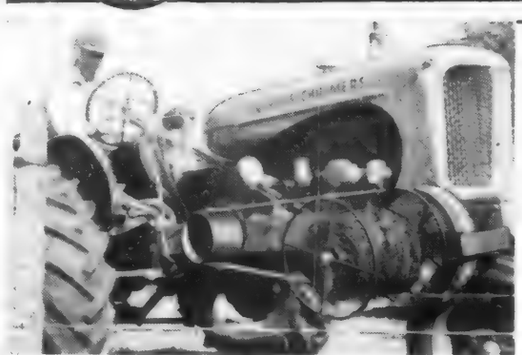
MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

A 817-230



WIRE WINDER

Roll and unroll barbed wire — electric fence wire — corn planter wire — with tractor either in stationary position or at speeds up to 15 M.P.H. Heavy duty slip clutch keeps wire tight! Roll of wire easily removed. Adaptable to nearly all tractors including Ford and Ferguson. Indispensable to any farmer who has used it.

Here's what some users say:

Mr. H. H. Carls, Beardstown, Ill., pictured above using his Wire Winder, states: "I have used many devices in my 48 years of farming but this is the best I have ever used. I wouldn't want to do without it."

Mr. Leslie Bucher, Francesville, Ind., declares: "No more rolling up wire by hand for me. I wouldn't take ten times what I paid for my Wire Winder if I would be unable to get another one."

Mr. Ralph P. Harris, Monroeville, N. J., comments: "Our Wire Winder saves many hours of labor -I would not sell it for any amount if I could not get another one."

If you once use it you'll always want it.

WRITE FOR FREE ILLUSTRATED LITERATURE AND LOW PRICES

MIDWEST WIRE AND STEEL PRODUCTS CO. SOUTH ST. PAUL, MINNESOTA, DEPT. A-47

FARM MANAGEMENT SINCE 1914

Services to Farm Owners Include:

SURVEYS REORGANIZATION BUDGETS
APPRAISALS ADVISORY ACCOUNTING
COMPLETE MANAGEMENT
FARM INCOME TAX RETURNS
PUREBRED LIVESTOCK ON COMMISSION
LIVESTOCK CONSULTANT
AGRICULTURAL ENGINEERING CONSULTANT

BURLINGAME, FIELD, PIERCE & BROWNE, INC.

714 Citizens Bldg. West Palm Beach, Florida Telephone 3-6556
45 West 45th Street New York 36, N. Y. JUdson 2-1948
158 Main Street Putnam, Conn. Putnam 8-6866

Write or Telephone for details

A SENSATION WHEREVER IT GOES... FOR

THE NEW KING-WYSE VERTICAL FORAGE HARVESTER

Illustrated is Model FH-55 Engine Powered with Cutter Bar

3 QUICK-CHANGE, POSITIVE-FEED ATTACHMENTS FOR CORN AND HAY

The new King-Wyse principle of vertical knives and feed rollers is revolutionary, and its low feed avoids many feed-in troubles of the old type forage harvesters. Crop travel from pick-up to cutter is less than one-fourth the conventional distance. With this years-ahead, compact field chopper and its three harvesting units, you can cut, chop and load ALL your forage and silage crops, in a "once-over" of the field. And you can do it with a speed and efficiency heretofore unmatched in forage harvesting.

For convincing proof arrange for a field-test through your nearest dealer. Write for detailed information.

ONLY KING-WYSE HAS ALL THESE "MOST-WANTED" FEATURES!

- 20 Ball bearings on the base unit assure long life, smoothness.
- Available in PTO or Engine Models.
- Hydraulic lifting mechanism standard equipment.
- Quick-change spiral knives 25½" long.
- Modern V-belt drive system.
- Self-aligning ball-bearing mounted feed rolls.
- Blower fan is heavy cast steel.
- Fan housing is heavy 10 gauge steel.
- Attachments include corn head, windrow pick-up, cutter bar.

KING-WYSE, INC.
ARCHBOLD • OHIO

FORAGE HARVESTERS • CROP BLOWERS • PORTABLE DRAG FEEDERS • FARM ELEVATORS • SUGAR BEET HARVESTERS • ELECTRIC MOTORS • POTATO GRADING EQUIPMENT

dollars right in the neighborhood, but only a dollar of it is available to him. That's the case with most of our soil potash. It's there, but it isn't available in a form the plants can use. So we have to supply it. In straight form we have muriate of potash: it's the most popular and carries 60 percent potash. There is also sulfate of potash which carries 48 percent potash.

Fertilizer Is Getting Stronger

The favorable tax situation which allows fertilizer to be charged off as an operating expense: the results that neighbors have had with big applications of fertilizer: the work of ag school experimenters—all of these have made the farmer plant food conscious. And the fertilizer mixing industry has recognized this growing interest. Such high analysis fertilizer grades as 15-15-15, 13-39-0, 6-24-24, 32-10-2, which were unavailable a few years ago, can now be bought in many places.

A New Approach to Fertility

About 6 miles off the end of runway 28 at Greater Pittsburgh Airport is a square mile of emerald green in the midst of brown and dishevelled mine spoils' banks. It is the Sunnyhill Farm of Cliff Snyder, who became interested in reclaiming this waste land about 6 years ago. One thing led to another and he is now one of the advance guard of big business farmers who have gotten into high analysis fertilizer for the good of the land, and what naturally follows, for the good of his farm pocketbook. At 40 Snyder was one of the men who had revolutionized the coal business, and because of a number of interlocking interests it was natural for him to turn his restless mind to farming. His "Colmol," high-speed coal mining machine, along with a number of other inventions had made his Sunnyhill Mine at New Lexington, Ohio, one of the largest strip mines in the country. Behind the stripping shovels were mountains of shale, and it was what happened on these banks that aroused his interest in the possibilities of putting them back into productive farm land. Freezing and thawing and the hot sun broke the shale into a sort of soil and within the year cottonwood and sumac trees started to grow. Then hardy weeds worked their wiry roots into the banks and finally a cover of wild grass made a stand. A series of chemical analyses of the banks showed them to be rich in trace minerals, but with a phosphorus level far below what was considered necessary to support plant life. He reasoned that the trace minerals were so abundant that they helped get the plants started on the banks.

One of the big spoils banks that Snyder's Company had worked a few years back was near Imperial, Pa., and around it were several hundred acres of farmed-out land, the kind that you can get $50 an acre for—if you are lucky. Snyder's company was required to smooth out the

CUT PLOWING COSTS Get better crops!

Lantz Kutter-Kolter... The original 2-blade Coulter

LANTZ 2-BLADE COULTERS
REG. U.S. PAT. OFF.

Save Their Own Price

The double-slicing action of Lantz 2-Blade Coulters cuts through trash, roots and stubble... aids plows in covering... avoids frequent stops to clear clogged plows. Gives "non-stop" plowing. Proved by 200,000 users. Only Lantz makes 2-blade coulters... a patented feature. You plow faster... save time, labor, fuel and money. They pull just as easily as other special coulters. Lantz is your best coulter buy.

TWO TYPES: The LANTZ KUTTER-KOLTER, famous since 1939, and the NEW MODEL B for plows of limited clearance... also two-way or left-hand plows.

GRIND YOUR OWN SICKLE BARS

Save trips to town, and money

The New LANTZ "Swinging" SICKLE GRINDER

Late engineering developments make it lighter, handier, sturdier, more compact, low cost. **Only $37.50,** f.o.b. factory. Slightly higher in west. Motor extra. Write for literature and name of dealer.

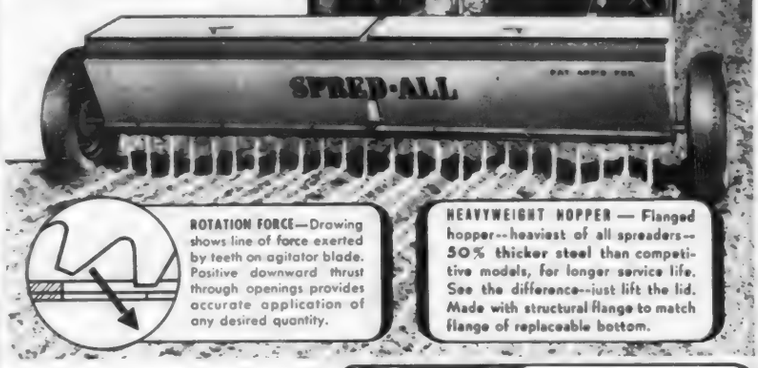
LANTZ MFG. CO., Inc.
Dept. CC-530, Valparaiso, Ind.

The SPRED-ALL

TODAY'S HIGH PERFORMANCE FERTILIZER DISTRIBUTOR!!

Compare WEIGHT-PRICE-RESULTS. Spreads all fertilizers uniformly, regardless of condition, in quantities of 8 lbs. to 8800 lbs. per acre. Unmatched for pasture rejuvenation, spreading lime, side dressing, spreading chemicals, or sowing grass and grain seeds.

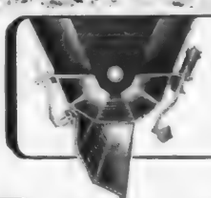
SPRED -ALL



ROTATION FORCE—Drawing shows line of force exerted by teeth on agitator blade. Positive downward thrust through openings provides accurate application of any desired quantity.

HEAVYWEIGHT HOPPER — Flanged hopper--heaviest of all spreaders--50% thicker steel than competitive models, for longer service life. See the difference--just lift the lid. Made with structural flange to match flange of replaceable bottom.

The SPRED-ALL is a heavy duty machine of many exclusive features. WRITE TODAY FOR BOOKLET AND NAME OF NEAREST DEALER.



SLIDE DROP—A great feature! Simply press down and turn six easily-operated holders; slide plate drops down for quick cleaning, changing, or replacement.

The COVER BOARD

PATENT PENDING ©

GUARANTEED PERFORMANCE

Can Be Quickly and Easily Fitted to Almost Every Make and Model Plow • • •

SIMPLEST, LOWEST PRICED COVERING ATTACHMENT MADE. UNCONDITIONALLY GUARANTEED BY THE MANUFACTURER TO IMPROVE THE COVERING ABILITY OF ANY PLOW.

The COVER BOARD turns under heavy, bulky trash without plugging or clogging—leaves your field clean. No work stoppage for plow cleaning. **The COVER BOARD** pays for itself in time saved.

Guaranteed to out-perform attachments costing up to four times as much. ***WRITE TODAY FOR INFORMATION!***

MR. DEALER: Request Franchise Data for both the **SPRED-ALL** and **The COVER BOARD** on your letterhead.

SPRED-ALL, inc. 700 Hickory St. Bellevue, Ohio

spoils' banks: coal mining laws controlling strip mining make this mandatory. It was 600 acres of this unlikely land that Snyder bought and put together as Sunnyhill Farm. The first thing that he did was to contour the steepest parts of the spoils' banks. The soil here was a rough mixture of shale and subsoil. As he says, "It looked terrible but I knew that I had an abundant supply of trace minerals.

"Next we went to work with dolomitic limestone," says Snyder. "We spread up to 5 tons to the acre. We insisted on a dolomitic limestone of a definite specification—99 percent of it had to go through a screen of 325 mesh. It came from the Ohio Lime Company at Woodville. We don't want any of the so-called 'agricultural limestone. A lot of these are a good part silica. With our lime we get an immediate lime effect—as soon as it makes physical contact with the soil. Coarser lime may last a long time, but that is a false economy: I want to see the effects in my lifetime. Then, too, dolomitic limestone has a high magnesium content, as high as 40 percent, and this is a necessary mineral for plants and animals grazing on the plants. It is also closely connected with the release of potash and phosphorus to growing plants." Snyder started his fertilizer program in 1950 with the application of 500 pounds to the acre of 5-10-10 in granular form, applied just before seeding the alfalfa.

It was only a few months until Cliff Snyder had evolved his own fertilizer formulas. They were high analysis mixtures fortified with trace elements: one used for blue grass was 20-10-20; one for brome and alfalfa was 0-20-20. Among the elements added were sulphur, magnesium, calcium, manganese, iron, zinc, copper, boron, cobalt, iodine and molybdenum. There was a continuing testing and experimentation. Starting with the spring of 1950 the major elements and trace elements were applied to all of the fields as well as the spoils' bank field at the rate of 100 pounds per acre each year. And all the fields received a basic spreading of 2 to 3 tons of dolomitic limestone.

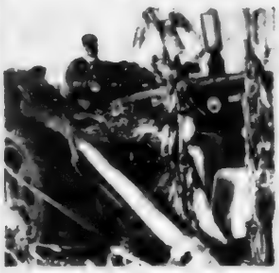
"As we ran the spreader around those fields and up and down the hills we began to think there must be an easier way to spread fertilizer," says Snyder. "The more we thought of it the more it seemed that irrigation was our answer. It was going to be necessary, we knew, to use completely soluble materials. We were going to have to work out the methods of combining the fertilizer timing with irrigation timing. But if it worked it would open up a whole new horizon. In the East in the last 3 years there have been times when water was just about as important to making a crop as it is in Arizona. Then there are summers when you get too much rain. We figured out that if we could get a soluble fertilizer mixture we could put it on in dry summers almost any time and do a good job.

This year IMPROVE YOUR YIELDS... CUT YOUR CROP PRODUCTION COSTS

USE HYBRO-TITE*

Nature's Own 20-Mineral Soil Conditioner

IOWA: 4 extra cribs needed for corn grown with Hybro-Tite



"We have noticed an improvement in the corn crop this season," wrote Mr. H. E. Hahn, of Hahn Brothers Company, Muscatine, Iowa, in August, 1954. "It has a very good color... greater growth... during hot and dry weather the corn maintained a good green condition."

After harvest, Mr. Hahn reports: **"We had to put up four circular cribs to hold the extra corn."**

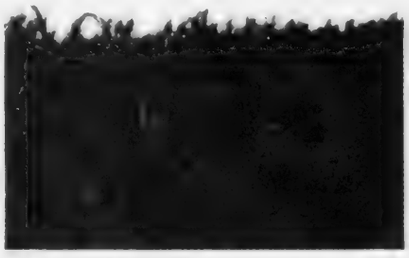
"We do not have exact figures on the yield," says Mr. Hahn, "but we do know that because we used Hybro-Tite we do have higher yields."

Above: Fred L. Hahn operates two-row corn picker. Below: two of the 4 extra cribs needed for Hahn Brothers' corn grown with Hybro-Tite.

PENNSYLVANIA: Cost cut 38%! Another Hybro-Tite user, Mr. L. A. Cretin of Dysart, Pa., says that his corn grown with Hybro-Tite and Colloidal Phosphate showed a saving of 6½¢ per bushel of shelled corn.

"Hybro-Tite wins in the home stretch by feeding the crop the whole season through," says Mr. Cretin.

MISSOURI COTTON: Saved $22.00 per acre! Lloyd Crafton (above) of Bragg City, Mo., says his test plot grown with Hybro-Tite yielded 51.1 lbs. more lint cotton per acre, at a saving of $22.00 per acre.



ARKANSAS RICE: Best in County! This rice field yielded 101 bushels per acre after Mr. Charles E. Cammack of Hamburg, Ark., applied Hybro-Tite, rock phosphate and Dolomitic lime.

At harvest Mr. Cammack was told, "You have the best rice in the county."

More growers report their successes with the natural soil conditioner that supplies Potash and 19** Trace Minerals

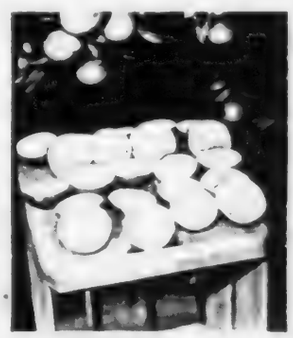
Low-cost, easy-to-use Hybro-Tite is proving its value to more and more farmers!

New reports from users indicate that this natural rock soil conditioner, supplying potash and 19 trace minerals, not only helps to grow bigger yields of many crops, but points the way to more economical crop production.

Tested on corn, cotton, peanuts, pastures, rice, fruits and vegetables, berries—Hybro-Tite has won praise for the way it tends to develop healthy, vigorous growth and to hold moisture.

Try Hybro-Tite this year—to improve your pastures, fields, gardens, orchards! Rich nutrients locked up in your soil may be set free by one or more of Hybro-Tite's 19 trace minerals.

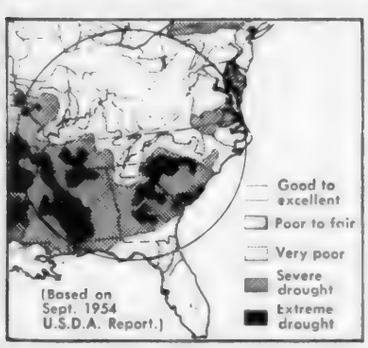
CITRUS: For the second year in succession, Hamlin Oranges from the grove of Mr. George E. Chambliss, Winter Haven, Fla., were reported first to be shipped out of the state. Solids were unusually high and exceeded standards required by law.



APPLY HYBRO-TITE NOW! It's never too early or too late to apply Hybro-Tite to your acreage. Spread it just as you would lime. Hybro-Tite is a long-term soil conditioner. Its elements will be gradually released—to benefit your crops this fall, and for several years to come.

A trial on your own land will show you what low-cost, easy-to-use Hybro-Tite can do to improve your yields!

PASTURES STAND UP BETTER DURING DRY WEATHER



INDIANA: "I used 500 lbs. of Hybro-Tite on my alfalfa. This year I cut more than twice as much as last year in spite of drought." —Byron Smith, RR 6, Terre Haute, Ind.

ALABAMA: "On a 9-acre field of Coastal Bermuda we today (Aug. 8) gathered 805 bales of hay averaging 58 lbs. each, over 2½ tons per acre."–Isham J. Dorsey, Opelika, Ala.

NORTH CAROLINA: "The grass held up a lot better during the dry weather this year than it has before... the cows seemed to prefer grazing where the Hybro-Tite had been put."—A. J. Andreoli, Pantego, N. C.

FREE VALUABLE BOOKLET

Get all the facts about Hybro-Tite! Send today for a free copy of "Nature's Own 20-Mineral Soil Conditioner." Ask for a copy of "Build Better Lawns and Gardens with Hybro-Tite," too. Address Charles L. Davidson, President.

POTASH ROCK COMPANY OF AMERICA, Inc.

LITHONIA, GEORGIA

*Trademark of Potash Rock Company of America, Inc.

**Potash- plus aluminum, silicon, sodium, titanium, calcium, phosphorus, magnesium, iron, manganese, strontium, yttrium, silver, zinc, zirconium, lead, chromium, nickel, copper, vanadium.

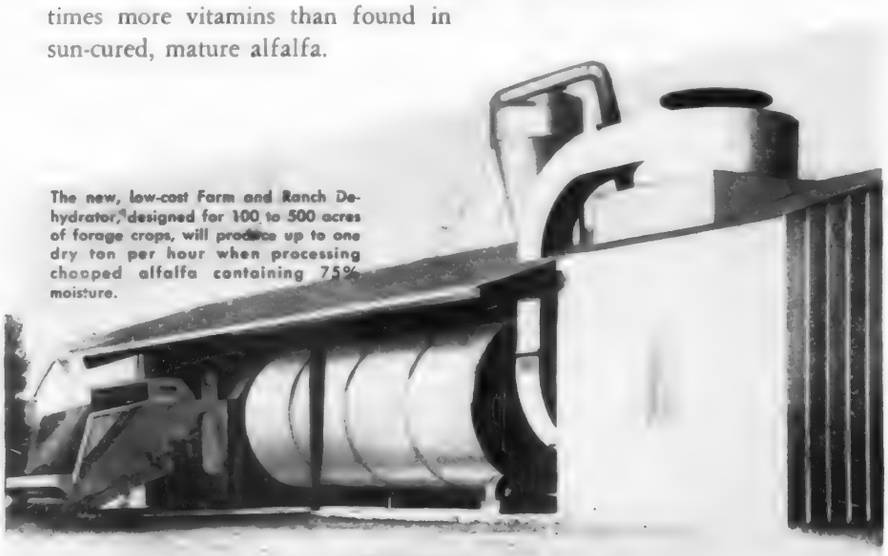
Why Harvest Hay --

When You Can Produce High Quality Feed the Modern Dehydrated Way?

	Yield per Acre per year	Vitamin A (Int. units)	Protein %	Fat %	Fiber %
Alfalfa hay, field cured	3-5 tons	12,000-35,000	14	1.6-2.2	29
Dehydrated Alfalfa	3½-6 tons	100,000-250,000	17-24	2.8	24

Now you can get rid of most of the hard work, sweat and risks that used to be associated with haying time . . . and provide your stock with richer, more palatable feed, with all the vital green pasture nutrients retained by modern "flash drying."

In one hour you can turn four tons of knee-high alfalfa into approximately one ton of pellets or meal . . . with a protein value of 17% to 24%, a fat content of 2% to 3% and seven times more vitamins than found in sun-cured, mature alfalfa.



The new, low-cost Farm and Ranch Dehydrator, designed for 100 to 500 acres of forage crops, will produce up to one dry ton per hour when processing chopped alfalfa containing 75% moisture.

"Flash Dry" YOUR FORAGE CROPS WITH ARDRIER DEHYDRATORS

When ordinary haying methods are used, authorities estimate that 38% of all hay is worthless or of poor quality due to weather. Harvesting with a field chopper and an Ardrier Dehydrator is a simple, easy, two-step operation not affected by rain.

Get the facts about the benefits of year 'round scientific feeding. Mail the coupon below for the *low-cost* details about Ardrier Dehydrators.

ARDRIER DEHYDRATORS are manufactured for ARNOLD DRYER COMPANY by

THE HEIL CO.

Dept. 4835
3048 W. Montana St.
Milwaukee 1, Wisconsin

Please send details about Ardrier Dehydrators to fit my requirements.

- ☐ Model SD75-22 for farms with 100 to 500 acres of forage crops.
- ☐ Model SD8-25 for farms with 400 to 1000 acres of forage crops.
- ☐ Model SD10-30 for farms with 1000 or more acres of forage crops.

Check Booklet Wanted:
Raise More Pigs with Less Feed ☐
Improved Beef Supplements with Dehydrated Alfalfa ☐
For Increased Profits from Sheep, Feed Dehydrated Alfalfa ☐

Name_____
Street or RFD_____
City_____ State_____

ARD-51

If it was in the wet part of a summer, then we knew we couldn't use a lot of water, even if it did save us time and money in spreading the fertilizer. That was where high analysis fertilizer fitted into the picture, for by using a relatively small amount of water we could still carry the needed amount of fertilizer to the plants. We have worked with test plots every year, but it was our results in 1953, a very dry year, that convinced us that we were on the right track.

"We set up three test plots in one of the blue grass areas of the pasture," continued Snyder, "each one an acre. Plot A was a control area. It was given 500 pounds of 10-10-10 in granular form with an additional 100 pounds of trace minerals added in late April. It was pastured by a herd of 40 cows at regular intervals. It was mowed on June 4, July 15, and August 28. The per cent of protein in the dry weight of cuttings from this area was 11.9. The per cent of ash (mineral content) was 8.3. The weight of the production of hay from this area was used as a base. It received no irrigation.

"Plot B and Plot C were treated in the same way except for fertilizer and irrigation. Each was given a total of 240 pounds of 20-10-20, applied at intervals throughout the growing season. This was our own mixture of soluble fertilizer with trace minerals added. This fertilizer was applied in the irrigation water every two weeks after the first mowing. The pasturing was the same as the plot A, as were the mowings. Plot B produced 9 times as much hay by weight as plot A and plot C produced 5.25 times as much. The per cent of protein in the dry weight in plot B was 24.8 and in plot C was 26.3. The ash per cent was 12.7 in plot B and 9.7 in plot C.

"We knew those results were no accident even if they were hard to believe because we had our results in the alfalfa-brome field to back us up. Here we used one check area and one test area, each an acre. In our check area we applied 400 pounds of 0-20-20 in granular form in April. We also applied 100 pounds of trace minerals. We made our cuttings on June 14, July 25, and September 3. It had no irrigation. Our second cutting on the check area produced 30 bales. Our third cutting, which was in a very dry period, produced 3 bales to the acre. On our "Fertilirrigated" area we applied a total of 200 pounds of 0-18-36, with trace minerals added, throughout the season. The timing was to do the irrigating-fertilizing approximately every two weeks. Our production here was 66 bales on the second cutting and 75 bales on the third cutting.

"That summer was an exciting experience and we just naturally got in the fertilizer business. We call our high analysis fertilizers 'N.C.I. Mineralized Soluble Plant Food' and they are being produced

HAVE YOU EVER SEEN PHOTOGRAPHIC PROOF LIKE THIS

FOR ANY OTHER

MASTITIS CONTROL PRODUCT?

HERE ARE THE FACTS ABOUT

TRIBIOTIC® OINTMENT

PENICILLIN • DIHYDROSTREPTOMYCIN • BACITRACIN

1 TRIBIOTIC contains *three* antibiotics: penicillin, dihydrostreptomycin and bacitracin. Teamed together, they make short work of the vast majority of the germs that cause mastitis. These antibiotics spread rapidly and *kill* the germs.

2 TRIBIOTIC's base quickly disperses the three antibiotics through the udder. Note the photograph above, which compares the spread of TRIBIOTIC's rapid-dispersing base with that of an ordinary ointment. TRIBIOTIC does not freeze, and the tube does not require shaking before use.

3 TRIBIOTIC does not "settle out" or stick to the sides of the tube. TRIBIOTIC is a uniform mixture and when you instill it, every bit of the medication gets into the udder!

4 TRIBIOTIC is easy to use! You just slide the cap off, insert the smooth infusion tip into the teat opening, and squeeze the ointment out of the handy one-pinch tube. No fussy preparation is required when you use TRIBIOTIC.

FOR QUICKER AND BETTER RESULTS— USE TRIBIOTIC OINTMENT AT THE FIRST SIGN OF MASTITIS!

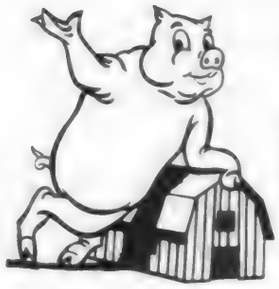
SUPPLIED:
Single-dose tubes, each containing 100,000 units penicillin with the equivalent of 50 mg. dihydrostreptomycin base as sulfate and 5000 units bacitracin. NOW ONLY 89¢ per tube.

Wyeth®
PHILADELPHIA 2, PA.

AVAILABLE FROM YOUR DRUGGIST OR OTHER ANIMAL HEALTH PRODUCTS SUPPLIER

It's Packed With Pre-Weaning

BOOSTER-POWER!



TUXEDO'S

Sensational New Pig Starter-

BIG PIG

Brings pigs up to weaning time many lbs. heavier—actually gives 1 lb. of gain for each 1½ to 2 lbs. of feed consumed!

Contains more than DOUBLE the normal amount of Vitamins and Antibiotics used in feeding pigs! Promotes vigorous health.

In pellet form—specially sweetened—baby pigs like it—eat it like candy!

EXTRA PROFITS

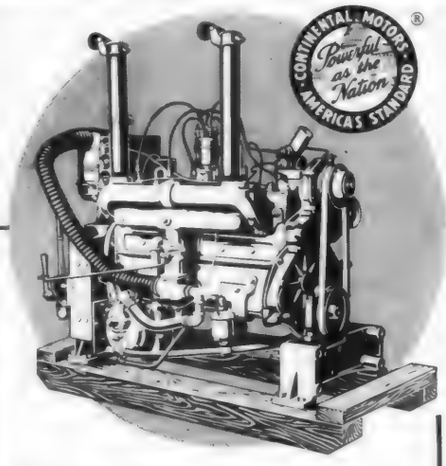
Early gains are the cheapest. So there is extra profit in feeding Tuxedo "Big Pig" Starter liberally during the entire pre-weaning period.

THE FEEDERS' SILENT PARTNER

Our 74th Year

THE EARLY & DANIEL CO.,
CINCINNATI 2, OHIO

TUXEDO FEEDS FOR LIVESTOCK AND POULTRY



DEPENDABLE MAN-MADE WEATHER

CONTINENTAL RED SEAL Model M-330 LPG Irrigation Engine—114 H.P. at 2600 R.P.M.

Red Seal engines are getting the call for more and more irrigation jobs, because they have already made good as a source of such specialized power. Every Red Seal irrigation power plant is engineered for irrigation use—designed and built to obtain the maximum output from today's high-speed pumps. The Continental line is unusually broad—10 to 270 horsepower—and includes models at every level for use on all standard fuels. For *dependable* man-made weather, choose dependable Red Seal power.

A COMPLETE LINE OF 4-CYCLE AIR-COOLED ENGINES

Continental also builds air-cooled models, from 2 to 3 h.p., for heavy-duty applications, both conventional and vertical shaft. They offer the exclusive Contex* external-gimbon system, greatest air-cooled engine advance in recent years. For information, address Air-Cooled Industrial Engine Division, 12800 Kercheval Avenue, Detroit 15, Michigan.

SERVICE FACILITIES AND GENUINE RED SEAL PARTS ARE AVAILABLE EVERYWHERE

Continental Motors Corporation
MUSKEGON, MICHIGAN

by Nutritional Concentrates, Inc. in New Lexington, Ohio.

"If you want to know what farmers in the neighborhood of the farm thought of our Fertilirrigated hay you should have seen them coming over last winter to buy it at $60 a ton, a good $10 over the market. And if you want to see what our herd of 60 milking Guernseys thought of the hay and grass silage made from those fields, I can show you the dairy records of our butterfat which has averaged out 6.1 per cent over the last 24 months. And the average of the cows in our milking herd is over 12,000 pounds a year per cow. This has brought our average receipts to $2.00 more per hundred than those of farms adjoining us."

One Fertilizer Won't Do

For many years 2-12-6 has been the standard fertilizer in the Midwest: in the Cotton Belt there was 3-9-12. But our soils have grown older and the fertilizer recommendations for grains as well as pastures and hay fields have changed radically. Many of our fields need several times more nitrogen than phosphate. In Minnesota many of the state recommendations have been a 2-1-1, 3-1-0 or 3-1-2 ratio. In much of the hilly parts of the South and westward through Alabama, Mississippi and Arkansas and Oklahoma the ratio requirements are strong on phosphorus and potash and have become 1-2-2 and even 1-4-4. And all of this wide variation does indicate one thing, that no one mixed fertilizer ratio will do for a large area; sometimes it is not even suitable for a large farm. To make a variety of ratios possible, an ex-county agent in Owatonna, Minnesota, E. S. Gandrud, has developed a 3-hopper fertilizer spreader. Known as the Gandy spreader the machine uses straight materials. By running the straight goods through three hoppers most of the problems of caking during storage are eliminated. The mixing is done on wheels as the fertilizer drops to the ground behind the spreader. It's easy enough to see that if the one ton of high analysis fertilizer that is dropped on the ground has the same number of pounds of plant food as 2 tons of mixed fertilizer, the stops to refill the hopper are only half as frequent, the weight on which freight, bagging and handling costs are applied is only half as much. The savings per ton of plant food can be as much as 32 per cent. Each hopper has a capacity of 700 pounds of straight high analysis fertilizer.

A new triple-liquid machine for applying nitrogen, phosphorus, and potash from separate tanks of liquid fertilizer has been developed by Plantation Fertilizers Corp. of Houma, Louisiana. It was announced in the late fall of 1954 and will be at work in Southern fields this spring. This is a big, rugged two trailer piece of equipment with hydraulic controls. It will apply up to several hundred pounds of nitrogen, phosphorus and potash per acre,

through tines that are adjustable for depth. The mixing of the three elements takes place as the machine moves through the field, and the amount of each is adjustable.

The High Analysis Pay-off

Interesting results of high analysis fertilizer use on a state-wide basis with county agents and farmers doing the testing have been reported in Wisconsin. In speaking of the 1954 results, C. J. Chapman, Extension Specialist, Soils Department University of Wisconsin, said, "Again in 1954, increases in the production of grasses and clover were spectacular. Farmers were astonished to see the tremendous growth of forage on the strip treated with 12-12-12.

"The protein content of nitrogen treated pasture grasses as grazed by cattle in late May or early June will run from 20 to 22 per cent on the dry matter basis. And, the average protein content for pasture grasses over the period of June and July will run about 18 per cent. With 18 per cent dairy feed costing about $70.00 per ton, we believe that it is fair to figure our increases in yield due to treatment at $50.00 per ton.

"Demonstrations with fertilizer on small grain and legume seedings with a check on the carry-over residual benefit to the hay crop the second year have been carried on over a period of the past 22 years. During the past 6 years, comparisons were made of the conventional 250-pound per acre versus double-rate applications (500 pounds per acre) of 0-20-0, 0-20-20, and 0-10-30 fertilizer with and without nitrogen.

"The residual benefit of fertilizer applied at the time of seeding has been checked on some 61 plots. The heavy-rate (500 lbs. per acre) application of 20 per cent superphosphate (or 0-20-20) made a net profit of $29.02 as compared to $20.10 for the 250-pound rate. The double rate 0-20-20 (or 0-10-30) plot shows the largest net profit of all ($41.21)."

The need for fertilizer is far from satisfied. For instance in Iowa, which we think

amazing new air compressor!

The new Model 336 *Farm'n'Field detachable-tank unit* is the last word in portable air compressors. Only five minutes to fill the tank and five seconds to disconnect it. Stainless steel tank. Filled . . . weighs less than 20 pounds . . . easily portable in emergencies. Operates grease guns and blow guns, sprays paints, etc. Low center of gravity. 10-inch rubber tired wheels. *Bigger compressor . . . delivers more air in less time!* ½ HP motor. See it at your dealer or write for literature to THE CAMPBELL-HAUSFELD CO., 181 Railroad Ave., Harrison, Ohio.

FARM'N'FIELD

CAMPBELL-HAUSFELD

"AMES Engineered MY GREEN YEARS"

An Ames portable irrigation system takes over where nature leaves off, giving you bigger, better, more timely crops with savings in water, soil and labor. Those *lean* years become *green* years!

There is no "magic" behind these benefits. Your Ames system is specially designed to meet the needs of your farm. Backed by 45 years of experience in manufacturing portable irrigation systems, only Ames offers you a complete line of equipment for sprinkler, furrow and flood irrigation.

Patented

Let your Ames dealer engineer the system for your needs . . .

- **AMES ROTO-RAIN** sprinkler systems use self-locking Ames ABC Couplers. No hooks, latches or "gadgets."
- **AMES WHEEL-O-RAIN and TOW-A-LINE** sprinkler systems are readily convertible to and from hand-move.
- **AMES GATED PIPE** with easy-action Neoprene gates accurately controls the water flow in each furrow.
- **AMES PERF-O-RAIN** low pressure sprinkler pipe spreads gentle "rain" rapidly in a rectangular area.

AMES

Established 1910
Member... SPRINKLER IRRIGATION ASSOCIATION

PLAN NOW with the Ames dealer listed in your phone book's yellow pages, or mail coupon.

PORTABLE IRRIGATION EQUIPMENT

W. R. AMES CO. 150 HOOPER ST · SAN FRANCISCO, CALIF. 3905 EAST BROADWAY · TAMPA, FLORIDA 2144 WELTON ST · DENVER, COLORADO

Send me free literature on Ames Irrigation Equipment.
I am interested in: ☐ SPRINKLER ☐ FURROW ☐ FLOOD

NAME _____

ADDRESS _____ TOWN _____ STATE _____

CROPS _____ ACRES _____ WATER SOURCE _____

AD

because . . . **marlows do the job better!**

Almost every Long Island farm had a record potato yield last year during one of the worst droughts in history. Marlow Sprinkler Irrigation Pumps were the answer to double the normal yield. For the story on more profit per acre see your Marlow dealer or write for Bulletin SI-53.

MARLOW PUMPS • RIDGEWOOD, NEW JERSEY
DIVISION OF BELL & GOSSETT COMPANY

of as one of the states where farmers have corn "know-how," we can see from the state figures that only an average of about 10 pounds an acre of nitrogen is being used for crops. Estimating that 7 pounds an acre of this is going to corn, we can see how much we are short the 100 pounds of nitrogen an acre that is taken out of the soil by 125 bu. corn.

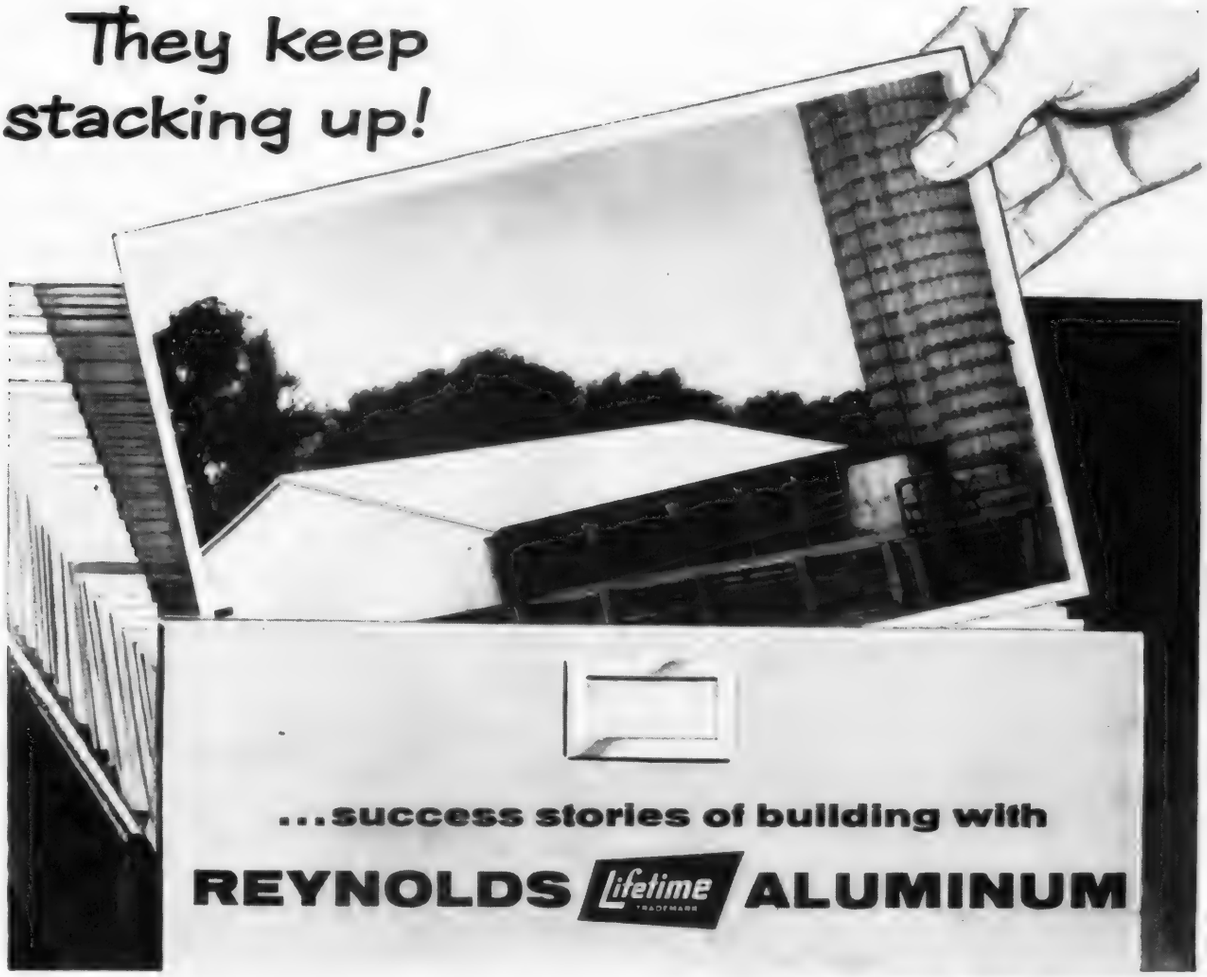
In North Georgia, A. B. Cross and his sons in Walker County have made a high analysis fertilizer program pay off. Their annual seeding for winter pasture is oats, rye grass, and crimson clover, and it gets 500 pounds of 7-23-12 per acre. The Crosses also have Dallis grass, Herd's grass (timothy), blue grass, orchard grass, lespedeza, white clover, and tall fescue. Their Ladino and fescue get an annual 33 pounds of nitrogen each fall. On their 230 acres of open land they grow all the feed for 80 dairy cattle. Their high production of feed in an area not noted for raising its own feed, won them a third prize in the Georgia Grazing System contest.

Indiana agronomist Howard Lathrope, long at Purdue and now with Allied Chemical, knows as much about corn and corn fertilizer as anyone in the Cornbelt. He says, "For years farmers wished for a one-shot high analysis fertilizer which they could apply quickly and evenly to their fields, without caking or bridging in the spreader or planter. Too much time has been wasted applying the old cracker barrel type of low analysis fertilizer, like 2-12-6. When 100 pounds of 2-12-6 was applied to an acre of corn it meant that only 32 ounces of nitrogen was to be divided among 16,000 corn plants. That small amount couldn't do much good and many farmers decided that fertilizer didn't pay; all it did was to give the corn plants a search warrant to go out and try to find the 2 pounds of nitrogen that were scattered around the acre.

"But now there are new fertilizers in which some real changes have been made. Take Arcadian 12-12-12; it's in a granular form, free from dust and caking. It dissolves in water as quickly as aspirin, so the corn plants can get it, even in a year in which there isn't much rain. One corn farmer who knows how high analysis fertilizer pays off is Les Boler, up near Welcome, Minnesota. He is a former GI and he went at the corn growing business with an open mind and a strong back. Five years ago his yields were averaging 55 bushels to the acre. In 1954 he laid on 100 lbs. of nitrogen, 100 lbs. of phosphorus and 100 lbs. of potash to the acre. He spread and sprayed the fertilizer on his 400 acres in one day. That, plus his plowed down crop residues, gave him a crop that is going to be hard to beat.' It averaged out at 125 bushels to the acre on the whole farm. Boler was on the ball in the fall. He picked, shelled, dried and stored 40,000 bushels in 20 days."

For the business farmer who wants to

They keep stacking up!



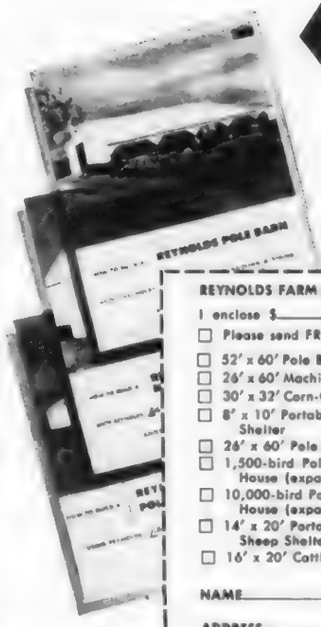
...success stories of building with

REYNOLDS *Lifetime* ALUMINUM

And farm profits stack up better, too! ...that's what Tim Pierce of Creston, Ill. concludes. Mr. Pierce put up the pole barn shown above on his West Woodlawn Farms—which comprise 960 acres in rich De Kalb County. He has 350 head of some of the best pure bred Angus cattle in the U. S., and he says: **"I wouldn't have anything but Reynolds *Lifetime* Aluminum. My barn stays cooler in hot weather, warmer in winter. That means more comfortable animals—better gains and more profits all round. This barn is easy to clean—no upkeep. Reynolds *Lifetime* Aluminum really does a job!"**

Add up what this farmer says. More comfort for animals because of aluminum's heat reflection—hence more profit. Less upkeep, still more profits. Then get your plans and build with extra-strong Reynolds *Lifetime* Aluminum. See your dealer. **Reynolds Metals Company,** Building Products Division, Louisville 1, Kentucky.

SEE "MISTER PEEPERS," starring Wally Cox, Sundays, NBC-TV Network.



With Reynolds new 48" wide Corrugated, the roofing and siding for this 52'x60' barn takes just 158 sheets instead of 307.

FARM INSTITUTE

Choose from 20 Advanced Building Plans prepared by Reynolds Farm Institute.

REYNOLDS FARM INSTITUTE, P. O. Box 1800, Louisville 1, Ky. 2027

I enclose $_____ for plans of buildings checked.

☐ Please send FREE literature on buildings checked.

☐ 52' x 60' Pole Barn	$1.00	☐ Sectional 4-Pen Farrowing House	.25
☐ 26' x 60' Machinery Center	1.00	☐ 40' x 60' Pole Cattle Shed	1.00
☐ 30' x 32' Corn-Crib	.50	☐ 20' x 60' Pole Lean-To	1.00
☐ 8' x 10' Portable Range Shelter	.25	☐ Shaded Self-Feeder	.25
☐ 26' x 60' Pole Cattle Shed	1.00	☐ 40' x 60' Pole Utility Building	1.00
☐ 1,500-bird Pole Laying House (expandible)	1.00	☐ Complete Dairy Unit	1.00
☐ 10,000-bird Pole Broiler House (expandible)	1.00	☐ Pole Lumber Sheds	1.00
☐ 14' x 20' Portable Hog or Sheep Shelter	.25	☐ *L-Shaped Cattle Shed	.60
☐ 16' x 20' Cattle Shelter	.25	☐ *Double Corn-Crib	.45
		☐ *Corn-Crib and Granary	.45
		☐ *Two-Car Garage	.15

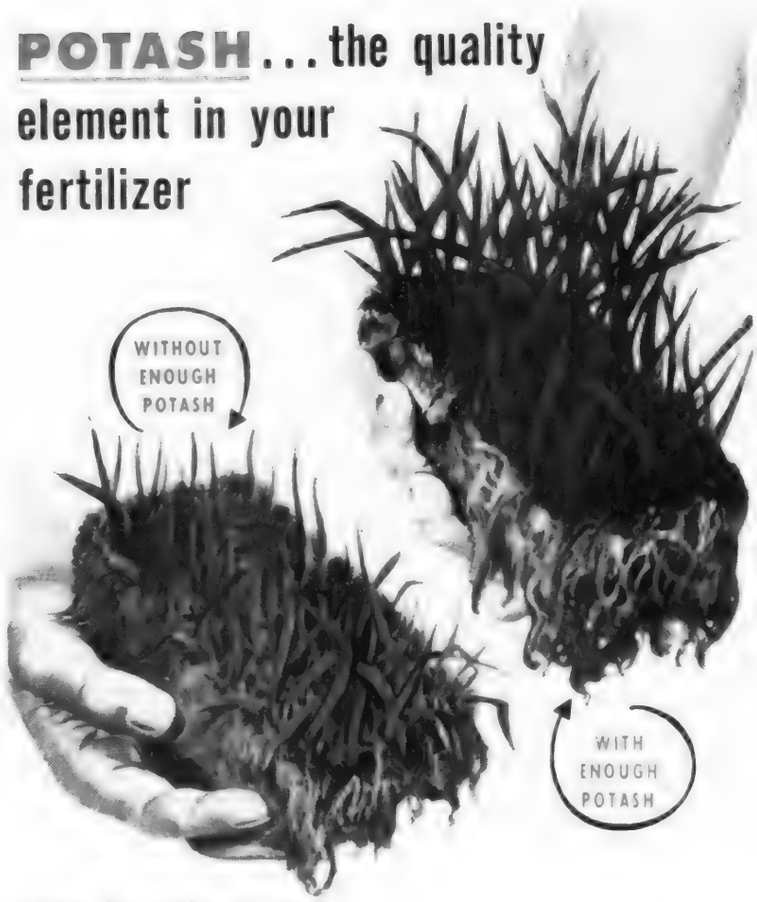
NAME_____

ADDRESS_____

CITY_____ STATE_____

*Midwest Plan Service

POTASH... the quality element in your fertilizer



side by side tests:

Prove it pays to go heavy on potash

Potash-fed, grass-legume combinations or any forage crop produce higher yields of lusher, more palatable, more nutritious pasture, hay or silage. Even more important from a cost saving standpoint—Potash builds sturdier, longer-lived stands. This means you save on barn or lot feeding costs. Get *more* milk, *more* meat per acre. Be sure your fertilizer supplies *enough* Potash. Consult your local agricultural adviser for correct amounts. But remember, a *low* Potash level means a *low* income level.

SEND FOR THIS FREE BOOKLET

It shows in full color potash deficiency symptoms in field, vegetable and fruit crops. For your free copy write to address below.

Symbol for yield... quality... profit

AMERICAN POTASH INSTITUTE, INC.

Dept. P-25, 1102 Sixteenth Street, N. W., Washington 6, D. C.

MEMBER COMPANIES: American Potash & Chemical Corporation • Duval Sulphur & Potash Company • Potash Company of America • Southwest Potash Corporation • United States Potash Company

Les Boler shows A. J. Schuler some of his 125 bu. corn.

put his operation into high gear, the next five years are going to be loaded with new tools and new fertilizers. The soluble and liquid fertilizers are coming fast and it is a good guess that the farmer may soon have a fertilizer tank sitting alongside his gas tank. New spreaders, tanks and sprayers are going to make the soil and plant feeding a speedy as well as profitable part of farming.

THE FARMER TAKES A WIFE

(*Continued from page* 50)

productive without it. He'll have companionship and a helpmate, and what more could a serious farmer want. We'll leave love to the poets and philosophers, and get down to brass tacks, the business of farming.

What are the qualifications of a wife for a young farmer who must make his way? We'll call her the Type I wife, and here are her qualifications:

1. She should be sound of wind and limb, her legs sturdy, and her hands wide and strong.

2. She may be fastidious about her person, but she should not be disturbed by muddy boots in her kitchen, nor by the dogs sleeping under the kitchen stove. She should not mind the breeze from a trench silo, which wafts into the house, nor the continuous parade of new-born pigs and lambs in bushel baskets by the kitchen stove.

3. She should be farm reared. If she has been brought up on a farm she will not be shocked by the little things that are always coming up, like finding a dead cat in the cistern or wheat chaff in the bed. She'll take these things in stride and she'll know how to do things. It takes a woman a long time to learn how to get her weight properly under a bale of hay.

the original self-propelled forager

will cut more tons per day than any other harvester

Up to 40 tons of corn per hour with row-crop head . . . 5 to 7 acres per hour of sown feeds, legumes, alfalfa with mower bar head . . . 3 to 6 acres per hour of windrowed hay with pick-up head. That's Krause Forager performance . . . as proved by years of experience. First in the field with all 3 quick-change cutter heads, the versatile, maneuverable Forager leads in high performance for lowest-cost harvesting . . . makes money for you all season long. Extra quality construction for heavy-duty service, minimum upkeep. Gasoline or Diesel power.

54" pick-up head gets 3 to 6 acres/hr of windrowed hay; replaces 2-row 40-ton/hr ensilage head.

7-ft. mower bar head harvests 5 to 7 acres/hr of sown crops, legumes. Ideal for dehydrators.

KRAUSE®

Rugged-built tillage equipment

TANDEM DISC HARROW on rubber-tired wheels handles toughest jobs quickly. Precision leveling screw; positive lift and depth control; wide-range, easy angle adjustment. 7 models, 18 sizes.

CHISEL speeds many tillage jobs — loosens soil, mulches, breaks up subsurface hardpan. Rubber-tired wheels; interchangeable points, spikes or sweeps. Hydraulic lift; 9 to 17-shank "2-in-1" sizes.

220 ONE-WAY with pivot action lift pulls easier to plow more acres per day. Positive depth control; simple adjustments. Extra weight, extra strength; anti-friction bearings. Sizes 13 to 27-disc 9 ft. to 17½ ft.; 24" discs, 9" spacing.

Can you make money with a Krause Forager on your farm? Send for the "Harvesting Analysis Questionaire", fill it out and mail it to Krause. Thousands of hours of operation have provided Krause with a substantial file of operating cost data. From this data an accurate projection of your "cost and profit" can be made to help you decide if the FORAGER will be a sound investment.

You will receive a complete Harvesting Analysis of your operation showing just what Cost-Profit-Production you could expect from a Forager.

Send for this FREE Service.

KRAUSE PLOW CORPORATION, 399 South Monroe, Hutchinson, Kansas

Send me free information about:

- ☐ Krause Forager
- ☐ Krause Disc Harrow
- ☐ Krause Chisel-Tiller
- ☐ Krause K-5 One-Way
- ☐ Harvesting Analysis Questionnaire

NAME_____

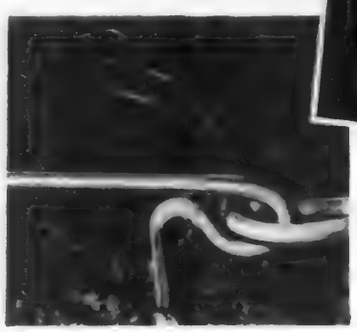
ADDRESS_____

CITY_____ STATE_____

FIRST F-L-E-X-I-B-L-E TINE HARROW

Can't be beat for breaking up and spreading droppings. Hitched behind a distributor it will thoroughly work fertilizer off grass so cattle can't get any. Does a thorough job in stimulating vigorous pasture growth. Use it behind disk harrows and with grain drill. Reversed, it becomes a chain harrow.

THE LOW COST IMPLEMENT THAT KEEPS ALL PASTURE LAND IN TOP CONDITION



SCATTERS CATTLE DROPPINGS
WORKS IN ALL FERTILIZERS
FINISHES SEED BEDS
RENOVATES OLD PASTURE LAND
AIDS IN PARASITE CONTROL

GET THE FACTS!
READ TESTIMONIALS from prominent grassland farmers. Literature on request.

Standard size—10 ft. wide.
Other sizes also available.

YOU CAN GET FULL FACTS AND INFORMATION FROM

FUERST BROTHERS
(NEW YORK) INCORPORATED
19 Rector St., New York, N. Y.

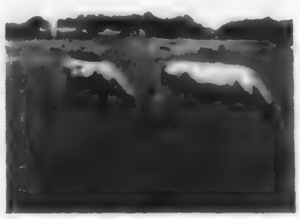
INCOME OVER FEED COST
...from $5,348
to $16,515
with GUERNSEYS

Income increased by 300%! That's the Guernsey success story of Dan Gill of Nesbit, Mississippi. Seven years ago, he started dairying with "just cows." But this ambitious young man was not satisfied with production records.

Purebred Guernsey sires were introduced, and Dan began to build toward a registered herd. Now, comparative figures of income over feed cost show this amazing increase:

First year, from "just cows": $5,348
Seventh year, with Guernseys: $16,515

Success will continue to come Dan's way! The Gill herd of 68 head, which now includes 17 registered Guernseys, will be further improved this year. Like farsighted dairymen all over the U. S. A., Dan Gill has proved that an investment in the profitable Guernsey breed pays big dividends in financial security.



FREE...
TO HELP YOU BUILD YOUR OWN PROFITABLE BUSINESS WITH REGISTERED GUERNSEYS!

Send for FREE Guernsey Literature Today!

1. PROFIT WITH GUERNSEYS. 24-page booklet packed with Guernsey information to help you.
2. NATIONAL GUERNSEY DIRECTORY. List of Guernsey breeders who have advertised stock for sale.
3. GUERNSEY BREEDERS' JOURNAL. Sample copy of valuable twice-a-month magazine filled with Guernsey data and news.

THE AMERICAN GUERNSEY CATTLE CLUB
506 Main St., Peterborough, N. H.
Send FREE information listed above to:
Name .....
Address .....
Town ..... State .....

4. She shouldn't have too much education, which is as dangerous as too little. High school is enough, right in her neighborhood. If she goes to college, she'll read books and learn how the other half lives, and she'll likely not be satisfied with life on the farm, always wanting mink stoles and a new Olds 98. It is a great mistake for a Type I farmer to marry a college girl. Comparisons made from books can be a distinct handicap.

5. She must like animals, and understand them, and be willing to pamper them and work all night long during lambing time and when the sows farrow. She should not be afraid of a bull or a mouse.

6. She should love to cook and her greatest joy should be in loading down the table with food and then watching it disappear under the attack of her husband and the hands. She should be thrifty, and emulate the squirrel, filling the cellar with canned goods and the deep freeze with fryers, strawberries, and corn on the cob.

7. She should like being alone. If she is shy and doesn't like people so much the better. She won't pine for the gay crowds, the tinkle of glasses, and the sound of empty laughter.

8. She should be able to bear fine, large, husky sons who can handle a tractor at ten and level off silage at twelve.

9. She should be willing to give up her egg money to help pay the mortgage or to help make the down payment on a new cornpicker. Although she has her mind set on a new washing machine, she agrees a new washing machine doesn't bring in the cash, a cornpicker does.

The Type I farm wife is found in numbers in Europe among the peasantry, where they are an institution. The good ones are grabbed up early by shrewd young farmers; the parents of the less desirable ones sometimes have to throw in a radio or a cow.

Here in this country Type I is about as hard to find as a good five-cent cigar. They just aren't turning them out on farms any more, for the farmer's daughter isn't what she used to be. Once she gets into high school (and what farmer's daughter doesn't get into high school?), she becomes a drum majorette, or her calf takes first place at the county fair and she has illusions of grandeur, and that spoils her for a good wife. If one can be captured young enough she can be made over by a man who is patient and strong. Once in a while a Type I comes from the Future Homemaker ranks, and there are rare cases where one is born, and nothing can change her. Lucky is the man who finds this rare flower. The ordinary male must put up with the run of the mine, or as a last resort marry a Type II wife, to be discussed in the following paragraphs.

MATHIESON

WATER SOLUBLE AMMO-PHOS FERTILIZER

AP makes the difference

Ammo-Phos® makes the difference between an average yield and a top-crop bumper yield which assures greater profit. AP provides for growing plants the most Available Phosphate you can buy in any fertilizer made in the United States. Actual tests by thousands of progressive farmers have proved the crop response of Ammo-Phos to be superior to ordinary fertilizers.

Laboratory tests offer conclusive proof that the Available Phosphate in Ammo-Phos is six times more water soluble than the phosphate used in ordinary fertilizers. See your Mathieson dealer today and buy Ammo-Phos for Additional Profit through Added Production.

MATHIESON

OLIN MATHIESON CHEMICAL CORPORATION

LITTLE ROCK, ARKANSAS • BALTIMORE, MARYLAND

2864

AMMO-PHOS FERTILIZERS

INSECTICIDES

ANHYDROUS AMMONIA

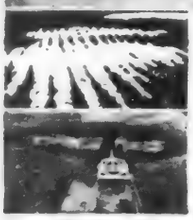
PORTABLE SPRINKLER IRRIGATION

Eliminate DEAD FURROWS and BACK FURROWS—Make a Better Seed Bed

Eversman All Purpose Tillage Tool and LAND SMOOTHER

Make plans now to smooth fields, fill pot holes, improve surface drainage with an Eversman. Eversman smoothed fields free of pockets, dead furrows and back furrows greatly increase crop yields—reduce labor and water costs on irrigated land. With springtooth attachment the Eversman is a complete TILLAGE TOOL, which breaks clods, mulches the soil, makes a firm, well packed seedbed which holds moisture, makes planting uniform, cultivating easier and harvesting faster.

Six all-purpose models for all standard farm tractors...for AUTOMATIC SOIL SMOOTHING, DIRT MOVING, SEEDBED PREPARATION!



Eliminate Pot Holes

With an Eversman and your own tractor it is easy and inexpensive to eliminate pot holes, fill gullies, straighten out terraces on hillsides, build farm over drainage ditches and grass waterways. Write for useful FREE booklet.

Tried and Proven in Rain Fall and Irrigation Areas Throughout the Nation

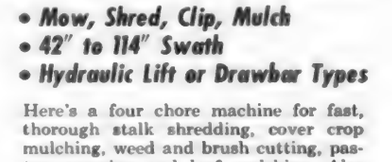
EVERSMAN MFG. CO.

Dept. 13 • Curtis & Fifth • Denver 4, Colo.

WOOD'S 4-CHORE ROTARY CUTTER

- *Mow, Shred, Clip, Mulch*
- *42" to 114" Swath*
- *Hydraulic Lift or Drawbar Types*

Here's a four chore machine for fast, thorough stalk shredding, cover crop mulching, weed and brush cutting, pasture mowing and leaf mulching. Also shred orchard and vineyard prunings.



Exclusive triple "B" V-belt drive absorbs shock loads even while transmitting tremendous power, thus protecting both machine and tractor. Universal Joint Drive with 50 H.P. capacity handles the power of the largest farm tractors. 15-inch drop center wheels or 8-inch with non-pneumatic tires. Wood's Rotary Cutters are available in either hydraulic lift or trailer models with 1, 2 or 3 blades. Blades overlap on 2 and 3 blade models for cleaner cutting. Wood's machines are adjustable from ground level to 14 inches in height.

Write, today, for your copy of a free folder and the name of your nearest dealer.

9 Models—42" to 114" Swath

WOOD BROTHERS MFG. COMPANY

13503 South 4th St. • Oregon, Ill.

Type II, For the Upper Classes

Now that we have given the poor but ambitious farmer a score card for a Type I wife, we turn our attention to the Type II wife, a much commoner species. The Type I wife fits into farm-life like a hand in a glove; she is the only asset on which the farmer pays no tax. The Type II wife, while possessing virtures of her own and not at all out of harmony in the bucolic scene, adds to rather than fits in. No farmer would list her as an asset—she might be regarded as a companion, a decoration, and sometimes a luxury.

She is most often found in the households of men who have inherited their lands from grandfather, who had a Type I wife. Then there is the occasional individual who started out in life with a Type I wife, who worked herself to death. In his declining years he finds himself with ample means, but lonely. His second choice is usually Type II, and more power to him.

The Type II wife had her counterpart in the old days—the frail, scented lady who painted china and read Ralph Waldo Emerson in the original, and took a girl out of an orphans' home to do the housework. For this reason she was without honor among her neighbors. If she had lived in England she would have been known as the squire's wife. She could not pinch hit for Dobbin when he got the heaves, but she brought sentiment and sensitivity to the farm, and her country gentleman husband could safely love her. This is more than can be said about the Type I wife, for whom love is an unsettling adventure.

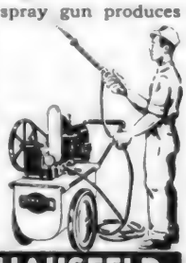
The thing to hope for in a Type II wife is that she likes country life and fresh air. Her intelligence and college education are not necessarily handicaps, as they are in Type I. The Type II wife should be able to carry on a conversation with either the hired hand or a banker, whose note is due. She should have a good memory for names, because she will find that the bulk of the matters discussed in her circle will be bloodlines. Although knowing the difference between a mare and a horse, a filly and a fillet, Type II wife should know when to be silent in the presence of men. With this blessing alone, some experienced men consider her adequate.

She should look well in blue jeans. It's not good if she runs to hips. She should be seen at horse shows, in jodhpurs, with a crop tucked under her belt in the small of her back. She should not scorn a martini, and, because she will live among men, she should know the difference between a straight and a flush.

Above all, she should take up a hobby, connected with farming, and pursue it to the bitter end of her own energies. This may or may not be profitable. If it is not profitable, the loss will be welcomed by her husband who takes it off his in-

easier with new **PARAGON Power Sprayer**

One man with this compact 12-gal. Paragon can *effectively* spray insecticides, disinfectants, weed killers, whitewash, water-based cement paints, silicone-type waterproofing compounds. Latest type spray gun produces mist for wide coverage, or stream 25 feet high. Pump delivers up to 1¼ gals. a minute. Low priced. See your dealer or write for catalog.



21 State Street
Harrison, Ohio

CAMPBELL-HAUSFELD

Tiger

AMERICA'S *FINEST* SMALL RIDING TRACTOR

your choice of **5 or 8 H. P.**

your choice of **12" or 16"** REAR WHEELS

AUTOMATIC TRANSMISSION IS STANDARD EQUIPMENT

EARN $500.00 A MONTH
PART TIME WORK SELLING THESE TRACTORS. WRITE FOR DETAILS . . .

TIGER TRACTOR CORP., E Street, Keyser, W. VA.

NEW FOR STOCKMEN

WRITE FOR FREE NASCO CATALOG

Order from this ad on moneyback guarantee. Ask for FREE Catalog of World's largest line of stockmen's and dairymen's supplies . . . hundreds of items you've never seen before to make farming more profitable!

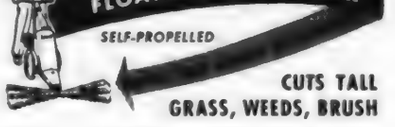
BE SURE . . . IDENTIFY YOUR COWS
Don't cull good cows, lose identity of purebred calves, make errors in breeding and ownership. Use these big numbered brass tags with strong 40" steel chains. **Specify numbers wanted. Order PD544.** 12 for... **$14.39** ppd.

BRIGHT RED - BLUE - YELLOW TAGS
Identify groups—age, breeding, feeding, etc.—by color. Individuals by number. Similar to brass tags above but made of heavy-duty plastic with big easily-read numbers. Specify color and numbers wanted. Order **PD437.** With 40" steel chains, per doz., ppd. **$12.45**

CASTRATE, DEHORN, DOCK WITH RUBBER BANDS
Easy, simple and safe. Dehorn and castrate calves. Dock and castrate lambs. Removes horns up to 6" long. To use, just place rubber band. Widely used and recommended. Order **PD232-233.** Elastrator with 100 rubber bands, ppd. **$14.30**

DAIRYMAN'S INSEMINATION KIT
NASCO offers world's most complete line of artificial breeding equipment. Dairyman's Kit includes steel chest, two vacuum bottles, holders for clean and used tubes, semen vials. Ample space for gloves, speculum, towels, etc. Wt., 10 lbs. Order **ABO** Dairyman's Insemination Kit... **$15.40**

NATIONAL AGRICULTURAL SUPPLY CO., Fort Atkinson 55, Wis.



CUTS TALL GRASS, WEEDS, BRUSH

2½ hp. B. & S. engine. New Floating Sickle Bar follows ground contour, cuts 36" or 44" swath. Rugged construction for heavy continuous cutting! Superior design assures safety and reserve power. Attachments available—Rotary Tiller, Snow Thrower and Reel Mower.

WRITE TODAY FOR MORE INFORMATION

jari PRODUCTS, INC.

2934-T Pillsbury Ave., Minneapolis 8, Minn.

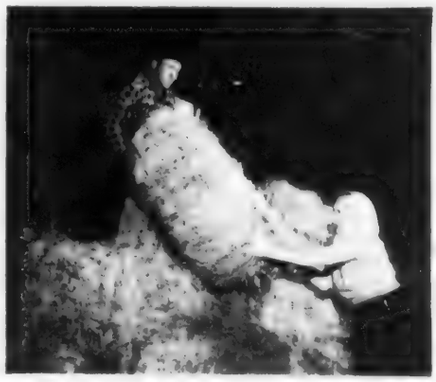
come tax; if it is profitable, she can brag about the price she gets for a bull, or a filly, or a bitch from an A.K.C. winner.

We know of a number of outstanding Type II wives. One, Mrs. Millicent Lippincutt, of Highlife Farms, near Indianapolis, has developed one of the finest Jersey herds in the country. Mrs. Lippincutt took a Christmas check from her father, an Indianapolis banker, and bought herself a good bull and a half dozen heifers. She pursued bloodlines, breeding, pedigrees, day and night. She studied the bull and the heifers. She crossed and recrossed, went to shows, talked Jerseys, and came out with blue ribbon winners. She has a genuine interest in the business and no small amount of knack. She knows how to make a good nick, and she prospers. Her bulls and her heifers command the highest prices. With no thought of profit, she is making profits, much to her husband's annoyance.

She likes good paintings, but she paints her own and frames them instead of buying printed classics. She can deliver a calf and once she was midwife for the tenant, whose wife's baby came a month too soon. She hires a strong woman to make jelly but she saves the rose pips, from wild rose bushes on the back pasture hill, to flavor it. She wants a dish washer, a garbage disposal, and a glass oven, but after dinner she sits with the men, compares a Jersey's butter fat with a Holstein's appetite, and knows when to laugh. She inherited two silver candelabra from her mother and she likes to put new candles in them and use them because they are charming even when she sits down to supper alone with her man.

How does one select Type II wife? Take your candidate to the fields and the barns. Escort her across a muddy feed-lot, lead her through poison ivy, and, poison and all, take her to a dance. She'll complain, to be sure, but if she comes back for more, she's your pigeon. If she's pretty and you love her, so much the better; but watch about the hips.

Now, the reader will see at once the weakness of our advice to the prospective farm husband. What would happen if the Type I farmer makes a goodly fortune and rises to Type II? What if he finds in later life that he can support a Cadillac and country club membership and mink stoles, which is quite possible in our great free country? What of his Type I wife?



It takes a long time for a wife to learn how to get her back under a bale of hay.

He has a problem here. Others have met it in reverse. Many a Princeton man has found it profitable to cultivate the simple virtues of bad grammar and forget that he knows how to bow from the waist. The farmer comes by these things instinctively and everybody will ad-

"Digest Advice made me over $3,000."

Mr. George Medlin, Unionville, Mo., farmer, wrote us of this experience:

"One flat statement from the DOANE DIGEST, 'Hold Gilts,' made me over $3,000 in 1953. My hog operation wasn't too big, and when I read, 'Hold Gilts,' I was out of hogs . . . just as soon as I read the article, I figured I'd act on it, and start looking for bred gilts."

Mr. Medlin's experience shows how money can be made by following the practical advice of the

DOANE AGRICULTURAL DIGEST

Subscribers continually write us, telling how the Digest made or saved them money. Similar advice is given on Cattle, Corn, Soybeans, Cotton, Wheat, Oats, Poultry, Tobacco and other agricultural products.
Would you like to know what advice the Digest is giving clients today? Then send for

FREE SAMPLE REPORTS

and see how the Digest can help you make more money.

DOANE AGRICULTURAL SERVICE, INC.

Box 249, 5142 Delmar Blvd. St. Louis 8, Mo.

BURCH FOUR-ROW FLEXI-HOE

WORLD'S ONLY POWER LIFT 4-ROW SURFACE CULTIVATOR!

Patented
Positive-Action STRAIGHT TEETH!

BURCH FLEXI-HOE is the one — and only — surface cultivator that assures complete, thorough coverage of any field! That's because only FLEXI-HOE features individual one-row gangs with TRIPLE FLEXIBILITY! Tough, straight teeth blast weeds with "explosive" force. No crop damage! No packing of ground beneath the teeth! All-steel PATENTED spider wheels are unequalled for mulching and break-up. Also offered in 2- and 3-row sizes. Drawbar FLEXI-HOE can be had in 2- to 8-row sizes. Mail coupon for name of your BURCH dealer now!

Available for Fordson Major Tractors

BURCH PLOW WORKS, Dept. Q-35, Evansville, Ind.

SPECIALIZED POWER-LIFT AND DRAWBAR IMPLEMENTS
- Wheel-Type Disc Harrows
- Standard Disc Harrows
- Surface Cultivators • Packers
- 2, 4, and 6 Row Planters
- Spike-Tooth Harrows
- Ridgers • Sub-Soilers

Send free fully descriptive literature:

NAME _____

STREET OR R.F.D. _____

TOWN _____ STATE _____

Now... you can have a 30 HOUR DAY!

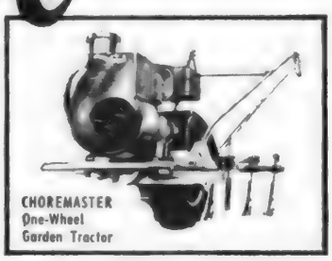
CHOREMASTER

Tiller/Mower · Garden Tractor

Work-saving CHOREMASTER units leave EXTRA hours for leisure.
If you're a big-time gardener, the multi-purpose garden tractor replaces many costly, single-purpose units . . . . ideal for ground preparation, hauling, snow plowing, mowing, weed-cutting and other yard and garden chores.
Or, if you're a more modest gardener, the versatile Tiller/Mower gives double value, just a 60 second switch from tiller to mower.

CHOREMASTER Double Duty Tiller/Mower

WRITE TODAY for dealer name, FREE Literature!



CHOREMASTER One-Wheel Garden Tractor

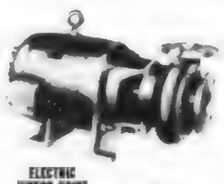
CHOREMASTER

Garden Tractors, Garden Tillers, Rotary Mowers, Chain Saws and Power Hole Diggers.

CHOREMASTER DIV.
WEBER ENGINEERED PRODUCTS, INC.
806-1 Evans Street
Cincinnati 4, Ohio

IRRIGATION { SPRINKLER? FURROW? FLOOD?

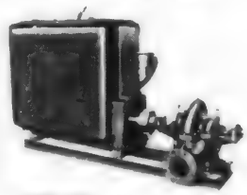
CARVER has the PUMP!



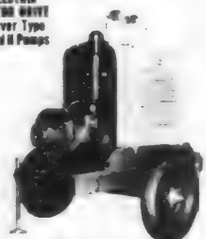
ELECTRIC MOTOR DRIVE Carver Type L and R Pumps

Whatever Your Power Source: Gasoline, LPG, or Diesel Engine, Power Take-Off, Electric Motor, Belt Drive one of these pumps is just right for your system.

CARVER PUMP CO.
1441 Hershey Ave.
Muscatine, Iowa

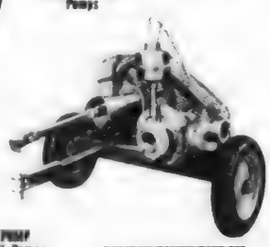


DIESEL DRIVE Carver Fig. 400 Pumps



GASOLINE or LPG ENGINE DRIVE Carver Model WRI Close-Coupled Pumps

BELT DRIVE PUMP Carver Type FXL Pumps



TRACTOR POWER TAKE-OFF Carver P.T.O. Pumps

CARVER the quality name in pumps

Distributor Territories are available. Write for full details.

mire his rugged simplicity and his democratic bearing. His bank account packs enough punch for him.

But his wife is a horse of another color, poor-soul, and we don't see how anything can be done for her. She will be much happier going on as she did when she carried water from the well and saved left-overs. She would probably be happier that way. If she isn't, by this time she'll have a daughter her husband can pamper.

We have, too, the annoying situation in which a Type II wife is tied up to a Type I husband. Because the female is stronger and smarter than the male, she can, and usually does, do something about this situation, pulling up herself, her husband, and the farm by the bootstraps into the Type II class. We can always hope things will work out. As they say, there's a lid for every pot.

To confound the cynics and save the nation, we have with us, too, the in-between type, neither Type I nor Type II. She is the ordinary farm girl who takes her calf to the county fair and gets a blue ribbon, and goes to college, too, and dates her boy friend on the next farm.

They go to dances together and they eat hot dogs and drink cokes at football games and, on some moonlight night in autumn while parked for a spell in the lane, he pops the eternal question. They both know what the score is—hard work, and babies raised by the book, and self-denial until a start is made, and having each other and laughing a great deal and having fun and a full life because they both would rather have a farm house on a hill looking out over their own fields than a penthouse on Fifth Avenue. These are the people who make farming the nation's greatest industry, they breed the sons and daughters who staff the professions and trades, pay the taxes, and fight the wars. God bless 'em.

IRRIGATION

Why Irrigate

(*Continued from page* 56)

a fair year, the value of an acre of irrigated tobacco was increased from $844.79 to $1,164.16. In Indiana, a banker who tried irrigation on corn and pasture crops on his tenant-operated farm, said, "Even in good years, we have increased our corn yield by fifty bushels and our alfalfa by around seventy-five percent with irrigation. After subtracting the cost of the equipment and the cost of operation, I still don't know a better way to get that much return on your investment."

Irrigating a new pasture seeding will speed germination and get a thicker, faster stand which will protect the soil against erosion. Farmers have also found that irrigation makes the fertilizer they have used as a side-dressing available to the plant roots and that the irrigation

system itself is a good, cheap way to apply fertilizer. Irrigation systems in orchards and on truck farms are being used to prevent frost damage by applying a light sprinkling during freezing periods.

Perhaps the oddest supplementary use of irrigation is to repair the damage done by rain. When driving rains have caused a crust to form which is preventing the emergence of such plants as beans, irrigation will soften the surface and let the tender plants through.

These are the chores of the irrigation system during good, average years, years when putting on water at the right time will increase the crop yield by a third to a half. During "normal" years of this type, it will take three to four seasons of use to pay for the system. When the bad year comes, the farmer with an irrigation system profits in two ways for he saves his crop and the drought causes an increase in the price paid for the crop. Yields in drought years are 12 to 15 times as much as in neighboring unirrigated fields. In disastrous years, the system pays for itself in a single season.

IRRIGATION—Big Irrigator

Continued from page 60

of water he applies for pumping expenses and labor. He does not include depreciation in this figure. "We have around $4,000 invested in the trunk lines and roughly $10,000 in pumps and laterals," he said. "You can figure the depreciation yourself, but it's rather tricky. The cement trunk lines shouldn't be depreciated as rapidly as the aluminum laterals and the laterals won't have the same rate of depreciation as the pump. None of the equipment depreciates as rapidly as most people think it does if it's handled right."

With potatoes as the principle crop, labor is one of the problems on this farm. Baker hires three and sometimes four extra men to run the irrigation system and either he or Bob Kearn supervises the work. For the year 'round work, he hires four men, but at harvest and packing time he brings in 40 or 50 extra hands who gather and pack the potatoes on a piece-work basis.

The growth of Baker's system over the past 16 years is almost the story of sprinkler irrigation in the Midwest. So far as he knows he was the first farmer in Ohio to irrigate field crops. When he rigged up his first system he took a lot of kidding from his neighbors who thought of sprinkler irrigation as something the wife might do with her garden hose to keep the petunias from wilting. When Baker doggedly persisted in his scheme, one of them said: "Wendel is just the opposite of the fellow who refused to patch his roof because it wasn't raining. He's so stubborn he'd go right on patching the fool roof if the house was on fire."

Because they are a good-humored lot, they still kid Baker a good deal—Grandpa Moses, they call him, because at 70 he has found a lot of fun in oil painting—but with his irrigated corn averaging 167 bushels to the acre last year (and the County Agent did the measuring) and his potatoes running 500 bushels, no one dreams of laughing about his irrigation system. As a matter of fact, most of them now have systems of their own or are planning to get one.

Appropriately enough, Baker first saw what irrigation could do during a vacation trip which took him to Utah, the first place in America where irrigation was practiced by white farmers.

"I had stopped at a service station somewhere in Cache Valley and was getting the car filled up when a farmer drove in with a load of oats," Baker recalls. "Well, you know how farmers are; I had to ask him about crops and what sort of yield he'd made. He told me his oats had threshed out around a hundred and twenty-five bushels to the acre and then claimed that he considered it a pretty poor crop. I just couldn't believe it, but he said that on their irrigated land they often made much bigger yields. Then I asked him how much fertilizer he'd put on and he told me, 'Not a pound.' Right then I decided that

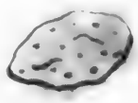
Increased Yields

Better Quality Products

Whatever you grow, you can grow it more profitably by supplying the *right amount* of water at the *right time* with OK Champion Irrigation.

Growers of many different types of produce are making extra profits with this "Quality and Pioneer Line" of irrigation equipment. Individually planned to fit your needs. Easy to set up—move—reconnect. Water an acre or a square mile quickly at low cost.

POTATOES



H. R., New York—Yield increased 50%.
L. S., Wisconsin—Yield increased 300 bu. per acre.
R. C. S., Pennsylvania—100% increase—greatly improved quality.

COTTON

F. C., Oklahoma—Increased from 1/5 bale to 1½ bales per acre.

ALFALFA

C. & J. P., Missouri—4 cuttings instead of 3.
V. K., Kansas — Increase ¾ ton to 5 ton.

CORN

L. B. N., Nebraska—Yield increased from 69 to 143 bu. per acre.
H. C. V., Mississippi—90 bu. per acre instead of loss.
W. S. C., Mississippi—87 bu. per acre instead of loss.
J. A. H., Indiana—137 bu. per acre.

TOBACCO

G. E. O., Kentucky—1000 lb. more per acre.
R. R. L., Pennsylvania—500 lb. more per acre.
F. C., Florida—400 lb. more per acre. Better quality.

TOMATOES

M. S. C., Michigan — 771 bu. per acre—$200 increased profit per acre.
O. A. C., Ohio—2 to 12 lbs. per plant increase—larger, firmer tomatoes.

OK CHAMPION IRRIGATION

SEND FOR CIRCULAR —LAYOUT PLANS FREE

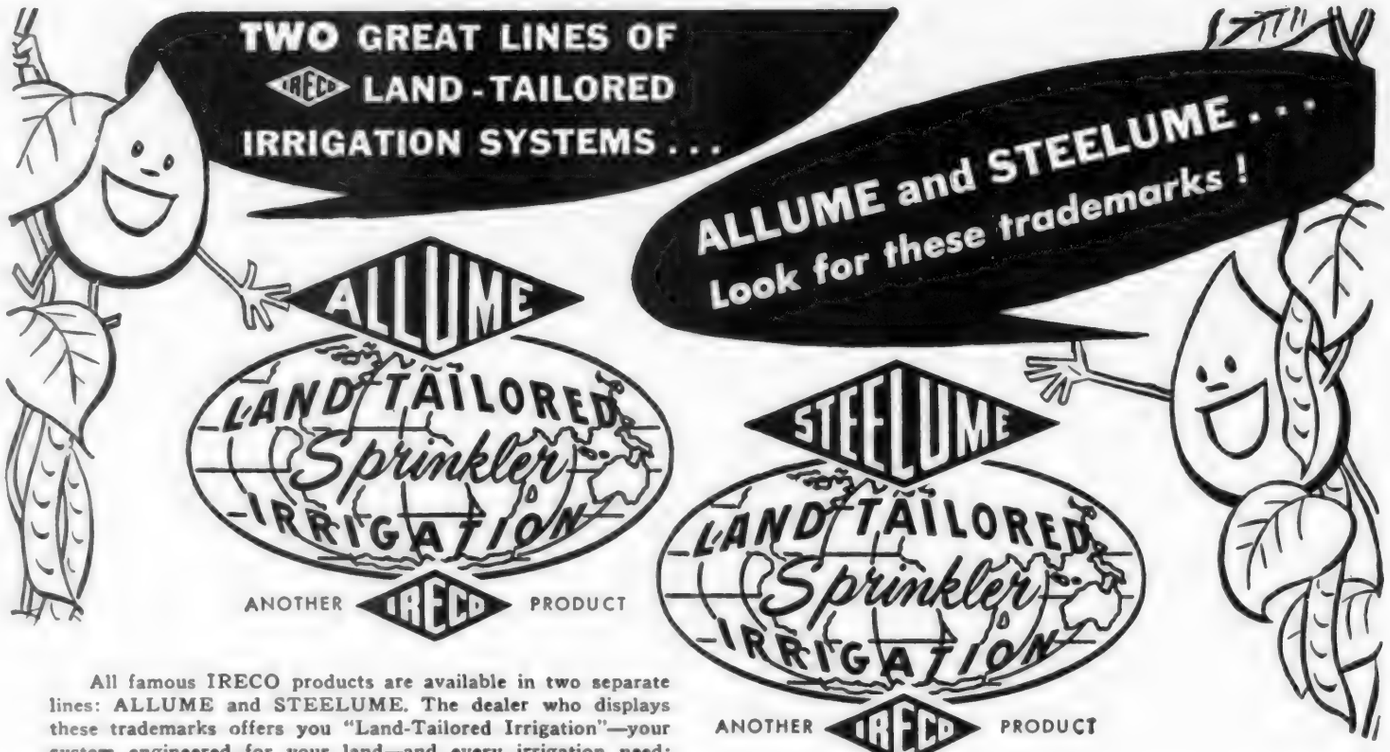
CHAMPION CORP.

4791 Sheffield Ave., Hammond, Ind.

Please send circular and data form for OK Champion layout plan.

Name.....

Address.....

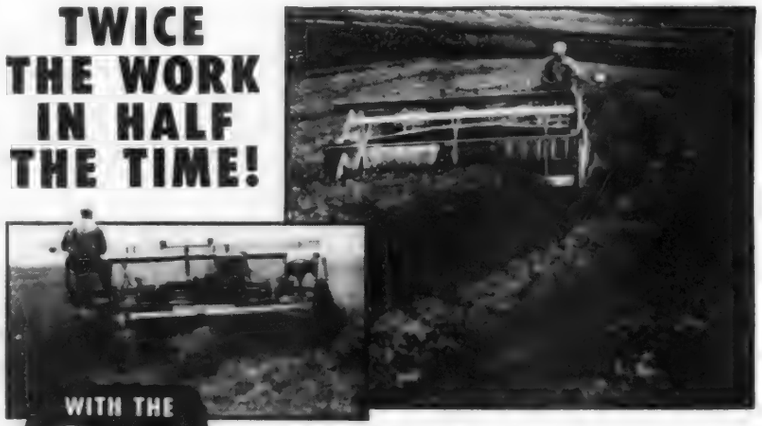


All famous IRECO products are available in two separate lines: ALLUME and STEELUME. The dealer who displays these trademarks offers you "Land-Tailored Irrigation"—your system engineered for your land—and every irrigation need: sturdy, precision couplers, valves and fittings, and mobile Speed-Tow and Speed-Roll units. Whether it's a fitting or a complete system, you'll get the best of service and guaranteed products from your ALLUME or STEELUME dealer.

SLA ASAE

MORE SURE MOISTURE
SPRINK and SPRINKLE the IRECO Twins

MANUFACTURED BY IRRIGATION EQUIPMENT CO. INC., EUGENE, OREGON



TWICE THE WORK IN HALF THE TIME!

WITH THE OMC OWATONNA

SELF PROPELLED—CENTER DELIVERY

WINDROWER

MANY PATENTED FEATURES

THE ORIGINAL—used on the farm, proved on the farm answer to low cost windrowing. Over 4000 Owatonna Windrowers are saving time and money for farmers across the nation. ONE MAN — ONE MACHINE cuts and windrows all hay or grain quicker, cleaner and easier than any possible combination of machines. RELEASE YOUR TRACTOR for other uses. Just once through a field for light, fluffy, quick drying windrows. 8' to 16' cuts, 15 H.P. and 25 H.P.

OMC PORTABLE ELEVATORS

Complete line of budget priced, large capacity elevators

FREE WRITE TODAY FOR FREE FOLDER AND COMPLETE INFORMATION

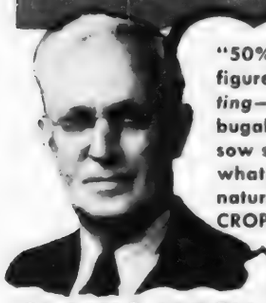
OWATONNA MFG. CO., INC. – OWATONNA 22, MINN.

I'd have to look into this irrigating business. I figured that if the farmers in Utah and Idaho and Colorado could pay for every gallon of water they put on their fields and then ship almost all of their stuff clear across the plains, right past my farm, and on to the Atlantic coast and still make money, I could afford to take the free water out of the Mad River and irrigate too. I knew that I'd have to use plenty of fertilizer since I wasn't farming new land like they were, but if enough water would make that difference on good fertile soil, I wanted to get in on it."

Baker realized that flood irrigation such as they used in the West was out of the question as far as his rolling land was concerned and that the cost of installing a permanent pipe system capable of watering 100 to 200 acres was too expensive. He decided that movable pipe equipped with sprinklers was the answer and scoured the junk yards to buy up a great quantity of four-inch, cast-iron boiler flue tubing. Then came the question of devising some way of getting the pipe to stick together without making a pipe-fitter's job out of irrigating. Baker presented his problem to O. M. Byres, an engineer from Pittsburgh. The problem of creating a quick coupling device interested Byres and he spent weeks on the farm and in his drafting room creating a heavy cast iron sleeve with a coiled spring sealer that would couple the pipe effectively when water pressure was

CLAY LOW COST NO HEAT HAY DRYING

DOUBLES HAY FEED VALUE SAVES BUYING HIGH PRICED SUPPLEMENTS



"50% OF U. S. HAY CROP IS LOST".—U. S. Department of Agriculture figures. *Bad weather—complete crop spoilage—rain leaching after cutting—sun bleaching to dry to safe moisture content*—these are the bugaboos of hay production. You buy expensive seed, disc the ground, sow seed, mow, bale, haul, elevate in the barn and only save 50% of what your ground produced. Add $1.00 per ton for power cost and a natural air Clay Drier and INCREASE THE CASH VALUE OF YOUR HAY CROP 50%.

J. B. CLAY, *Pres.*

CLAY'S MECHANICAL MOW DRYING WITH *NATURAL AIR*

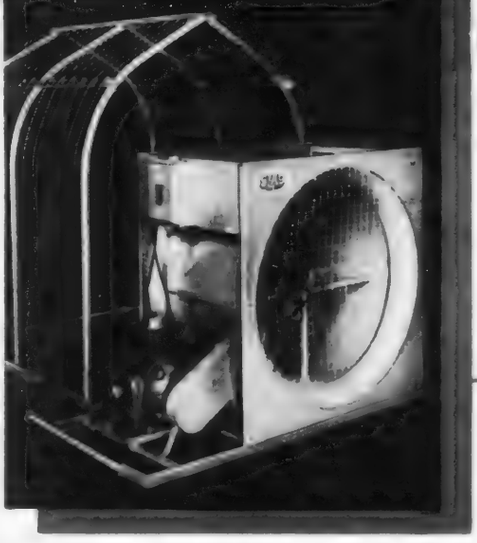
Mow drying by the Clay method can

(1) ELIMINATE THIS WEATHER HAZARD.

(2) ABSOLUTELY INCREASE FARM DAIRY PROFITS.

(3) MAKE SUCH TREMENDOUS SAVINGS THAT CROP DRYING EQUIPMENT WILL PAY FOR ITSELF (UNDER NORMAL CONDITIONS) IN TWO YEARS TIME OR LESS.

Cut only as much hay as can be put in the mow in one day. Mow in the afternoon. Let lay overnight. When dew is dry next morning rake into windrows. When hay reaches 40% moisture put up late in morning or after dinner, depending on heat. Start the fan and dry it in the mow. Under ideal conditions, you can cut in the morning and place in the mow in afternoon . . . your hay is exposed to weather in the field for as little as 6 hours.



NO FIRE HAZARD

Possibility of spontaneous combustion is eliminated. This means also there will be no musty brown, mow-burned hay for livestock.

WHAT ABOUT COSTS

Read what this farmer says:

"The crop drier paid off right from the start. The thing that amazed me is the way the cows eat that good mow dried hay. I've seen our cows turn their backs on good grass silage and go for hay instead. In all my years of farming, that's something I've never seen before. The cows really like mow dried hay and their liking it pays off in dollars and cents. MY AVERAGE BUTTERFAT HAS JUMPED 2 POINTS OVER ANYTHING I'VE EVER HAD IN THE LAST FOUR YEARS. THE ONLY REASON I CAN GIVE FOR THIS GAIN IS BETTER QUALITY HAY. WHEN YOU'RE MILKING 60 COWS THAT ADDED BUTTERFAT MAKES YOU MONEY IN A HURRY.

The actual cost of operation is running under the figures guaranteed by the manufacturer. The initial cost was low and the unit will pay for itself in a hurry."

Francis Winkowitsch
Kesley, Iowa

Power costs average about $1.00 per ton of hay

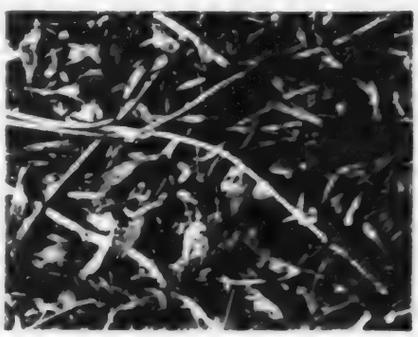
WHAT YOU GET WITH *OPEN FLOW* DUCT SYSTEM . . . . . .

1. HIGH CAPACITY FAN, CHOICE OF 4 SIZES.
2. OVERLOAD CONTROL.
3. CHOICE OF MOTORS 5 TO 7½ OR 10 H. P.
4. OPEN FLOW DUCTS BUILT IN SECTIONS FOR EASY ASSEMBLY AND TO MEET SPECIAL REQUIREMENTS.
5. CUSTOM INSTALLATION BY CLAY TRAINED MEN.

CUT HAY EARLY • AT PROPER MATURITY POINT • ALMOST IGNORE THE WEATHER

Mow hay when it is at the peak of perfection . . . when feeding quality and feed value are at the greatest. Hay has better taste, better digestibility. Remember, there is an exact right time to cut for the most feed value. Don't wait on the weather.

For example, cut alfalfa at 1/10 to 1/4 bloom when it contains 19% protein (approximately 50% more than at late cutting). Red clover 1/2 to full bloom. At the same time an early cutting of the first crop of hay *automatically assures a better second cutting* and results in 10 to 15% more hay being harvested during the year.



SAVE LEAVES • SAVE 90% OF FOOD VALUE →

Clay drying methods eliminate leaf shattering losses due to handling hay when it is field cured. Field dried to 20% leaves and leaf stems which contain most protein become brittle and drop off. Clay Drier also reduces losses from bleaching, dew, rain, sun. This saving can bring up to $20.00 more milk per acre from a dairy herd.

INCREASE MILK OUTPUT LOWER FEEDING COSTS AT THE SAME TIME

Tests show Clay mow-cured hay brings up to 20% more milk per acre . . . from $25.00 to $50.00 more net profit per cow per year. Eliminates need of purchasing additional protein feeds. This saving alone can pay for a Clay Drier in 2 years or less (figured on the basis of a 25 cow herd).

FACTORY TRAINED ENGINEERS *HELP YOU PLAN YOUR DRYING SYSTEM*

FREE CROP DRYING MANUAL

A postcard brings these to you Free. Ask for them today.

CLAY EQUIPMENT CORPORATION
354 Fulton Street, Cedar Falls, Iowa

Gentlemen: Please send me the following manuals from the Clay Postcard Library.

CLAY

- ☐ Crop Drying Manual
- ☐ Corn Drying Manual
- ☐ Walk-Thru Stalls
- ☐ Barn Cleaners
- ☐ Silo Unloaders

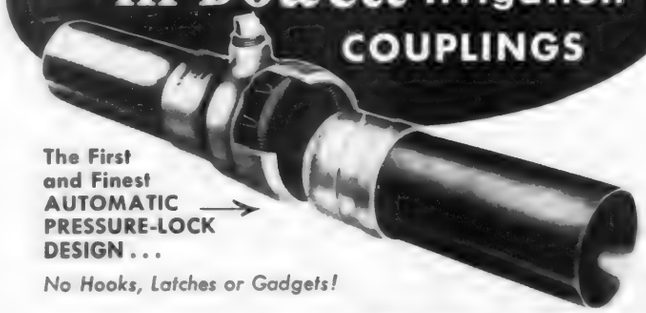
NAME _____

ADDRESS _____

For PORTABLE SPRINKLER IRRIGATION that WORKS BETTER with LESS WORK . . .

Always use STREAMLINED

McDowell Irrigation COUPLINGS



The First and Finest AUTOMATIC PRESSURE-LOCK DESIGN . . .

No Hooks, Latches or Gadgets!

Original, Streamlined McDowell Couplings

provide the simplest, fastest, most efficient method of connecting or disconnecting irrigation pipe. No tools of any kind are required—and there are no yokes, latches or clamps to bother with, keep in repair, break, or get in the way.

In this patented construction,

water pressure automatically forces the gasket and grip coil forward to assure a positive seal that will not leak. The greater the pressure, the tighter the seal.

Today, in all parts of the country,

McDowell Coupling Systems are proving their superiority for the irrigation of practically every kind of farm crop, fruits and pasture land. They require less work . . . less upkeep . . . cost less in the long run . . . and do a better job. If you want the best in portable sprinkler irrigation, you need the very best coupler—and that's McDowell. Compare it with any other design and see for yourself.

IRRIGATION PLANNING SERVICE is offered by your local McDowell Coupling dealer. Stop in and see him. He has the experience to engineer and install a system for you that will give maximum results from each dollar invested.

McDowell—The Best Coupling Made!

For Complete Details—Free Booklet . . . ***Mail Coupon Today!***

McDowell Manufacturing Co. 1C
Dept. SQ-55, Pittsburgh 9, Pa.

Charter Member Sprinkler Irrigation Association

Name_____

Address_____

_____

McDOWELL MANUFACTURING CO.
Pittsburgh 9, Pa.

put through the system. This basic idea, with many improvements, is still used by one of the irrigation equipment companies who bought the design from Byres.

"We drilled wells in the different fields to cut down on the amount of pipe moving we had to do," Baker recalls, "but I still had to hire a big crew of twelve Mexican workers and I broke my arches and nearly broke my back moving that cast iron pipe. The pipe and the couplers were so heavy that we had to move each one separately and even then it took two men to a length of pipe.

"Eight years ago we made our first big change. We stopped using the wells and put in our trunk lines to the fields. This made it unnecessary to drag the pump from well to well. We also threw away the old boiler flue and replaced it with a four-inch steel pipe. That was a great day for my arches. The new pipe, in sixteen-foot lengths, only weighed 60 pounds. We were able to cut our irrigating crew to six or eight men with this lighter pipe. We still had our problems though. Our fields are a half mile long and running water that distance in four-inch pipe created enough friction to cut down on the water pressure when it reached the end of the line. We tried using six-inch steel pipe, but the weight problem was just too much for us.

"The big change for us and for sprinkler irrigation around the country came after the war when light-weight, strong aluminum tubing became available. We had a lot of money tied up in steel pipe and kept on using it until 1953, then we made the change and sold the steel pipe for about half what we paid for it. We replaced the sixteen-foot lengths of four-inch steel pipe with thirty-foot lengths of six-inch aluminum tubing which weighed about half as much. With lighter pipe to move we were able to cut our irrigating crew again, this time to three men. We also bought one new pumping unit and some new tractors.

"This amounted to a lot of money spent, and 1953 was about the worst year we have had in potatoes. Cost of production was high and prices were low, so we simply had to make a good crop of both potatoes and corn in 1954. We know, of course, that with irrigation you should use plenty of fertilizer or soil fertility may be a limiting factor. We plowed down 700 pounds of 8-16-16 and put 1200 pounds of the same fertilizer in the band after we planted the potatoes. This was our usual fertilizer program with potatoes. With corn, we decided to go a lot stronger than usual. We plowed down 600 pounds of 10-10-10 and side dressed with 300 pounds of 8-16-16. We didn't dare overlook anything so we broadcast aldrin at the rate of around a pound and a half to the acre in the corn to knock out wire worm.

"With all of this preparation, luck still played a part in giving us our big corn yield. Last year we used a new corn planter and didn't get the plates set just right and came out with a six and a half inch spacing in forty inch rows which gave us almost twenty thousand plants to the acre. When the plants came up and we saw what had happened, I was really stunned. I knew that if it turned out dry we'd never make it and it *did* turn out dry. We had never irrigated corn before, but this time we knew we had to. So we just mowed out two rows of corn down the center of the field so we could lay a lateral there and then we watered from each edge of the field and got good coverage. Part of the corn we were able to water four times putting down about five inches of water in all. On this plot we averaged 167 bushels to the acre. One field we only got to sprinkle once and harvested 118 bushels. And one field we didn't irrigate at all and made only 81 bushels. Our main trouble is that we have put so much land into potatoes that our acreage allotment on corn has shrunk. The corn we irrigated four times only amounted to 12 acres—but we grew as much on these 12 acres as the average American farmer grew on 50. Don't tell me irrigation doesn't pay!"

GORMAN-RUPP PUMPS

The pump, while only 20% to 35% of the system cost, is 100% necessary to good sprinkler irrigation.
Insist on the Best Pump Gorman-Rupp.

ARE BEST !

BEST because they are FIRST*

- ***First with*** — Completely engineered units; pump is most efficient at engine's best range. Every model first proven in practical farm use . . . . . ***since 1946***
- ***First with*** — Long-life check valve, with positive lever control on most models . . . . . ***since 1951***
- ***First with*** — Removable end plate for quick access into pump without breaking connections ***since 1941***
- ***First with*** — Shaft seal under suction, virtually ending seal failures in the field . . . . . ***since 1941***
- ***First with*** — Large drum-type fuel tank — three times usual size . . . . . ***since 1951***
- ***First with*** — Overall operational safety — each unit has adequate protection controls Standard ***since 1953***

BEST because they are PROVEN

- ***Proven*** — in combined experience of more users than any other sprinkler irrigation pump.
- ***Proven*** — by their builders — themselves practical farmers, including J. C. Gorman and H. E. Rupp.
- ***Proven*** — in laboratories and on experimental farms our own and those of a score of agricultural schools.
- ***Proven*** — on special project and name farms — like famous Malabar as illustrated above.

*GORMAN-RUPP ORIGINATES!—OTHERS IMITATE!

GOVERNMENT GUARANTEED LOANS

Now you can buy your sprinkler irrigation system on a government guaranteed loan. **Do This** —

1. Developed an Engineered Irrigation Plan. Gorman-Rupp will help you. It costs nothing.
2. Your local or county committee will pass on the plan's feasibility.
3. With the plan's O.K. you buy your system on a loan guaranteed by the Federal Government.

LOW INTEREST — LONG TERM

Get started Now—Contact your local supervisor of the

FARMERS HOME ADMINISTRATION

U.S. Dept. of Agriculture
In phone book under U.S. Government or inquire of your County Extension Agent.

MAIL THIS COUPON

GORMAN-RUPP CO.
Mansfield, Ohio

Gentlemen:— I want an Engineered Irrigation Plan developed for my farm. Have your irrigation engineer contact me, at no cost or obligation to me.

Name . . . . . .

Address . . . . . Co. . . . . State . .

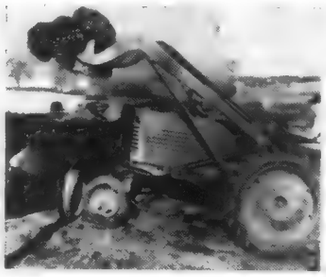
Irrigation Acreage Estimate . . . . . Acres

Lake ☐ River ☐ Ditch ☐ Ponds ☐ Well ☐

THE GORMAN-RUPP CO.
MANSFIELD, OHIO

FARMHAND is the key to modern, low-cost spreading and feeding!

CUT SPREADING TIME and you cut costs! The big Farmhand 6-ton "Power-Box" Spreader gets the manure onto your fields *faster*, in fewer trips. Its large capacity makes spreading your distant fields easier, *less expensive*. In from 2 to 6 minutes, you can spread a 6-ton load in 9 to 12-ft. swaths. The "Power-Box" Spreader is PTO-powered, with smooth, dependable worm-gear driven floor conveyor. Treated marine plywood floor and special alloy aluminum sides resist manure acids, outlast steel.



FASTER LOADING, TOO—The husky Farmhand "Universal" is a loader with strength and reach to spare. Box-section lift arms with 3" cylinders lift as much as 2500 lbs. in the 14-cu. ft. bucket. Detachable Scoop and Hay Basket make it a year 'round work saver. For row-crop and adjustable wide-front tractors.

FEED MECHANICALLY—The Farmhand "Power-Box" Feeder cuts down on labor costs—enables *one* man to easily feed over 500 head. The 2-beater, front-drive Feeder uniformly mixes dry or green feeds . . . fills feed bunks as you drive along. Big and dependable, it unloads from belt-type or auger cross-conveyor.

Farmhand®

FIRST IN FARM MATERIALS-HANDLING

FREE Illustrated Booklets!

Write: **THE FARMHAND COMPANY**, Hopkins, Minn., Dept. 376

☐ 6-Ton "Power-Box" ☐ "Universal" Loader
☐ 4-Ton "Power-Box" ☐ I am a student

Name_____

Address_____

Town_____ State_____

A Division of Superior Separator Company

(*Continued from page 55*)

silage better for feeding. The complete dry pellet permits self-feeding and thus decreases the actual time required to feed the lambs each day. The dry pellet is made up every few days at the central plant and the ratio of roughage to concentrate easily can be altered from time to time. In addition, many feed experts feel there is benefit from having the complete ration in the rumen at the same time rather than having the grain and protein supplement consumed at one time and the roughage consumed at a different time.

"We've had to go forward by a trial and error process," says Larner. "I've checked with the colleges on this idea of feeding dehydrated silage. It's so new they haven't done any work with it. Our own work with silage has shown me that silage might be called a pre-digested feed. The fermenting has taken place and some of the work that would be done by rumen bacteria takes place in silage making. The stomachs of ruminants can more easily turn good silage right into energy and meat. Anyone can see that with storage capacity for only 500 acres of grass production, we are not going to have enough room to store even one cutting from all our fields. Neither are we going to feed enough cattle and sheep on own own ranch to use up the feed as fast as we produce it. At least, we won't until we get a lot of pens built and get our animal population up to the 10,000 cattle—25,000 lamb figure we are aiming for. That's why dehydrating after the silage is made solves the problem of how to store more of it."

How They Got Into Irrigation

Around 1940, grazing crops began to appeal to operators of irrigated land and by 1945, 45,000 to 50,000 acres of irrigated pasture were being grazed in California. It was about this time that the Sutter Basin Corporation entered the irrigation pasture picture with Phil Larner in charge.

In 1946, the Sutter Basin ranch was one of the largest commercial spreads to pasture cattle on irrigated pasture. Prior to the start of the 1940's, beef cattle had been raised on hill ranges. A short precarious grazing season between December and April resulted in a great deal of risk in the hill range type of beef production. During World War II, the demand for beef resulted in overgrazing of the hill ranges and the irrigated pasture areas were required to handle some of the surplus cattle.

Irrigated grassland grazing presented many problems, both then and now. For one thing, grass-fat cattle were not quite good enough for the tightened quality of carcass demanded by the buying public when the second World War was over. In addition, the best grazing season on irrigated pasture is during the spring months and therefore more cattle can be utilized at that time than during the later summer months. However, pasture in the hill-range country also was best during the spring months and therefore it was difficult to buy cattle from the hill range to utilize the lush early season growth of the irrigated areas. In order to cope with the shortage of cattle and to use the increased growth of pasture during the spring months, the Sutter Basin folks made trips into Montana the previous fall to purchase weanling calves. These calves were delivered to Lovelock, Nevada or to the Imperial Valley to be wintered and then they were available as feeder calves the following April. As long as grass-fat cattle were acceptable, this procedure worked fairly well.

It did not take long for Larner to see that the grazing of irrigated pasture had many drawbacks. It resulted in an untimely flow of feeder stock, in that the hill-range cattlemen were wanting increased numbers of cattle at the same time the irrigated pasture operators wanted them. Under a pasturing system, clipping was necessary during peak seasons in order to control growth. After the material was clipped, there arose the question of what to do with the clippings. Some chose to haul and stack the clippings as potential winter feed and weather the accompanying problems of cutting, curing, stacking, and disposing of a product that has gone through a marked deterioration from

TOP-DRESS FOR TOP YIELDS

with the nitrogen that fits modern farming methods!

Now you can give your crops the nitrogen growing power they need — faster, easier, with less work and no waste. ARCADIAN® UREA 45 is the highest-analysis form of dry nitrogen, in free-flowing 45% nitrogen pellets. Quick-acting, long-lasting, with no harmful residues, UREA 45 gives you everything you ever wanted in nitrogen fertilizer.

Winter wheat and barley shoot up strong when you top-dress with 45 to 110 pounds of ARCADIAN UREA 45 per acre. It goes on fast with a fertilizer spreader, even faster by airplane. UREA 45 penetrates to the roots, but doesn't run off with thaws or rains. It provides growing power that builds sturdy stalks and big heads of grain. UREA 45 also helps grass and legume seedings "catch" to make high-yielding stands.

Fruit trees get a full feeding of the nitrogen they need with ARCADIAN UREA 45. It takes only 4½ pounds of UREA 45 to give a big apple tree enough nitrogen for heavy bloom, dark green leaves and good fruit set and yield. If trees show need for nitrogen after they leaf out, feed them fast with UREA 45 in pest control sprays.

Pastures get up and grow more nutritious, protein-rich forage when you top-dress early with ARCADIAN UREA 45. You get quick-acting nitrogen for early growth, plus long-lasting nitrogen that keeps grazing good for months. The big nitrogen payload in UREA 45 makes top-dressing fast and easy. A ton of UREA 45 in the hopper covers 15 acres at 60 pounds of actual nitrogen per acre.

See your ARCADIAN *distributor now!*

Ask for early delivery so you can get the full benefits of early applications of ARCADIAN UREA 45. Ask your dealer also for free literature or write to Dept. J at the nearest address below.

NITROGEN DIVISION
Allied Chemical & Dye Corporation

NITROGEN DIVISION ALLIED CHEMICAL

New York 6, N. Y. • Hopewell, Va. • Ironton, Ohio
Indianapolis 20, Ind. • Omaha 7, Neb. • Columbia 1, S. C.
Atlanta 3, Ga. • San Francisco 3, Cal. • Los Angeles 15, Cal.

"I've Compared 'Em All—You Can't Beat

PERFECTION!"

You get extra grain protection at lower cost with BS&B "Perfection" Grain Bins. These quickly-erected, long-life steel bins give your grain the best protection from weather, fire and rodents. Yet they actually cost less than other similar-type bins. Compare them, yourself! See how much you save with BS&B "Perfection" Bins.

BS&B STEEL GRAIN BINS

ALL SIZES — 1,000 to 3,300 BU.

These 6 Big Features Make "PERFECTION" Bins Best

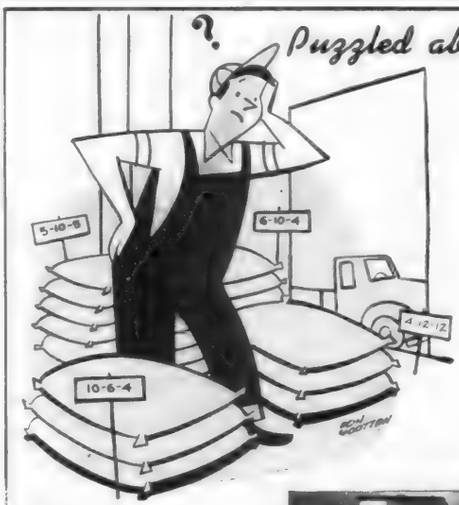
1. **CANOPY ROOF** keeps rain and snow out, protects walls from eaves dripping.
2. **EXCLUSIVE CAP-TYPE VENTILATOR** fits over roof section, protects against leaks and blowing.
3. **3-WAY VENTILATOR** bolts shut, adjusts to 1" opening or is removable for 21" center-filling opening.
4. **CORRUGATED CONSTRUCTION** gives extra strength. Cadmium-plated bolts and nuts resist rust.
5. **ONE-PIECE DOOR FRAME** matches corrugated side-walls for tight fit. Full 3-ft. wide door, 22 ga. double thickness.
6. **24-GA. STEEL FLOOR,** made in 2 halves with sturdy splice plates, is mastic-sealed to keep vermin out!

For Your Protection, Demand "PERFECTION"

BLACK, SIVALLS & BRYSON, INC.

Department 8-EA3

7500 East 12th St. Kansas City 26, Mo.



Puzzled about what fertilizer to buy . . . and how much?

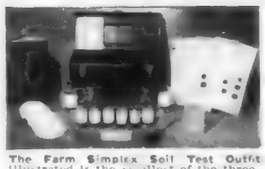
TEST YOUR SOIL THE *Simplex* WAY

AND BE SURE THAT YOU HAVE THE CORRECT FERTILIZER AND THE PROPER AMOUNT NEEDED

Simplex

COMPARE before you buy . . . make sure that the soil tester you purchase can measure in pounds and parts per million the amount of nutrients present in the soil and can enable calculation of the exact fertilizer required . . . and be sure it contains the ammonium test, so essential in determining the total available nitrogen content of the soil.

Commercial Simplex Soil Test Outfits are available in three sizes priced $25.50, $34.50, $49.50, F.O.B. Norwalk, Ohio. Shipped via Railway Express.



The Farm Simplex Soil Test Outfit illustrated is the smallest of the three, yet these outfits are more efficient than another make of soil tester and is lower in price.

SOIL TEST OUTFITS

ARE DESIGNED FOR THE AVERAGE PERSON . . . NO CHEMISTRY KNOWLEDGE REQUIRED

Simplex, the accurate soil tester, gives you an exact fertilizer prescription for your land and an estimate of the increased yield it will bring.

Write today for free catalog and a copy of "The Fable of the Discouraged Farmer."

THE EDWARDS LABORATORY • P.O. BOX 318-D • NORWALK, OHIO

the time it was clipped as a highly nutritious green plant. Others chose to tie up long hours of labor in baling the clippings.

As the seasons passed, Larner came to feel more strongly that the method to make maximum utilization of forage was to harvest it in lush season and store it in silos so that the high quality could be maintained—even for long periods of storage. Chemical analyses had shown very little deterioration occurs in the nutrients of forage when it is ensiled properly.

During the feeding period of 1954 some 10,000 lambs were finished on the 57 per cent dehydrated Ladino and alfalfa silage, 35 per cent ground barley and 8 per cent cane molasses with good results. There were 314 scrubs left toward the end of the feeding season, and Aurofac, containing aureomycin, was added to the ration so that each lamb would get 20 milligrams a day. Before the aureomycin was added to the feed these scrub lambs had been making a daily gain that averaged .1876 lb. a head. After it was added they made an average daily gain of .3405 lb. The 314 lambs averaged out to a nice profit of $3.65 a head, after all costs.

This work with the scrub lambs, which usually produces a loss, has given Larner the direction that some of the feeding will take next year. He plans to produce pellets that contain both an antibiotic, in the form of aureomycin, and a hormone additive, which will be Stilbosol.

As Phil Larner goes farther into his big project, his results and conclusions should provide guideposts for new methods of feed production, feeding and storing.

In the meantime, the big ranch keeps nine combines, nine Caterpillars, and a multitude of trucks and small tractors busy with 3000 acres of rice, 3000 acres in mixed alfalfa and Ladino clover, and 4000 acres in small grains.

Starting for $300

(*Continued from page* 59)

The farmer who wants to increase his system 10 or 20 per cent has practically no problem at all; most systems are planned with that much leeway. He should talk it over with his dealer, however, to make sure that the design will stand the extra load before adding the pipe and sprinklers. It is important to check, because under the code adopted by the Sprinkler Irrigation Association the dealer agrees to stand behind the systems he designs. However, he is relieved of this obligation if the farmer changes the design or fails to follow the operating procedures agreed on when the system was planned.

If the increased size of the system goes beyond the efficient capacity of the pumping unit, all is not lost. For a few cents for each sprinkler, a slightly smaller nozzle can be installed which will cut down the amount of water the sprinkler uses and so reduce the total load on the pump. Even when the system remains the same size, the nozzles should be checked occasionally to make sure that the wearing action of water and silt hasn't increased their size and so added an unplanned burden on the pump.

Double Capacity at No Extra Cost

Most supplemental irrigation systems as they are designed today could be made to do double duty *if* the farmer has the extra water and the extra labor and is willing to use them. The usual system is planned to be operated 10 hours a day during the irrigating season. There's nothing in the book, however, that says a system can't be used continuously and do double the work. Moving the pipes at night will be a tough job and won't be done as efficiently as in the daylight, but in the 14 additional hours the operator should at least do the same amount of work he does in a 10-hour day.

Why then aren't more systems designed to work continuously? Simply because irrigation engineers have found that after the first year the night work is neglected and the outfit won't do the job it was supposed to do. A second drawback is that night and day operation makes every move more critical. If a system which is designed for 10-hour operation is shut down, it can catch up with a few hours sprinkling after dark. But when a continuous operation system hits a snag, there is no catching-up time available and the farmer falls behind on his watering schedule, and crops suffer.

Building the Water Supply

Had Fred Ralphs been able to do what some farmers in Wisconsin, South Dakota, and Arkansas are doing, his problem of building an irrigation system gradually would have been simplified. In some parts of these states, and probably in many other areas over the country, the water supply can be built right along with the irrigation

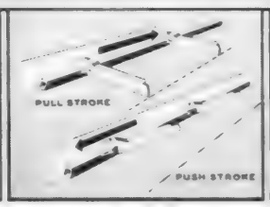
NEW Low-Cost Jamesway
SHUTTLE-STROKE CLEANER
with up to 24 months to pay

- Priced within reach of every dairyman
- Minimum operating and upkeep cost
- Fits any stall arrangement
- Works with gutters of same or uneven lengths
- Only one power unit is needed
- Easy to install anytime of year

HERE'S the new Jamesway Shuttle-Stroke barn cleaner . . . with Jamesway *quality* and *service* . . . at a price as low as the lowest cost cleaner. Yet, this new barn cleaner offers all the exclusive benefits of Jamesway Shuttle-Stroke action: easy installation, once-a-day barn cleaning, low upkeep, long life. Saves hours of back-breaking work. Lets you handle more cows, easier, for more income. Ask your Jamesway dealer for details and prices. Have him show you Jamesway's complete line of money-saving, labor-saving barn equipment.

PAY FOR YOUR JAMESWAY CLEANER WHILE IT PAYS FOR ITSELF—CONVENIENT TERMS, 12 TO 24 MONTHS

NO RETURN ELEVATOR
Shuttle-Stroke action delivers direct to spreader. Exclusive "elbow action" makes gutter bar flexible: elevates as it cleans. No elevator pit needed.



HOW IT WORKS
With Shuttle action a steel bar, folding paddles do all the work. This means less than 20% of cost's in gutter where wear, corrosion are greatest.

DROP OFF CONVEYOR
Drops manure directly from gutter into spreader. If your barn setup makes this equipment preferable. Simple, positive, low cost and trouble-free.

Modernize with the complete line of Jamesway Power Chroing Equipment

Power Ventilation

Twin-Boom, Level-Cut Silo Unloader

Shuttle-Stroke Cattle Feeder

Magic-Flow Poultry Feeder

Jamesway
Ft. Atkinson, Wis.
Mount Joy, Pa. Los Angeles 63, Calif.
FIRST IN POWER CHORING (T.M. Pend.)

Mail coupon today for free folder giving details on this new, low-cost Shuttle-Stroke cleaner. Address: JAMES MFG. CO., Dept. FQ-35, c/o your nearest branch office.

Name ..... Route .....
Town ..... State .....
My herd totals about ..... cows.

Everything Sprinkler Irrigation Does . . .
WADE'RAIN DOES BEST!

WATER MOVES TO PROFIT WITH

"The Leader"

WADE RAIN Sprinkler Irrigation

FREE "Farm-Facts" INFORMATION FORM

The most convenient planning aid you can find to help you select the correct sprinkler irrigation system for every size of farm . . . every crop, soil condition, power supply, etc. Write for your copy today.

NEW 5 Year PAY Purchase PLAN

Available to all Qualifying Farmers. Purchase price of your WADE'RAIN Equipment budgeted so that normal crop increases thru Sprinkler Irrigation will more than make the payments. *Use this Long Term, Easy Payment Plan!*

Be Years Ahead!

You don't have to tell any WADE'RAIN owner how wise he was in his choice of his Sprinkler Irrigation equipment . . . he feels it every day in time and labor saved . . . writes it on the credit side of the ledger every year in *reduced crop production costs.*

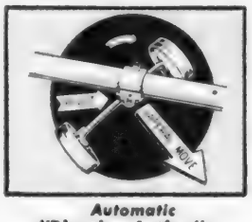
Wade'Rain EXCLUSIVE, world-famous features add up to faster, easier moving of sprinkler lines; gives every farmer a choice of THREE methods of moving Laterals by power. Wade'Rain's patented LOKS-IN, Self-Draining Gasket saves time. No lifting pipes full of water!

NEW! REVOLUTIONARY!

"Water on Wheels" **moved by its own power unit. Complete Lateral rolls to new position "as easy as walking across the field". One Man Operation.**

Pulls Lateral Lines directly behind your Tractor. **Simple . . . fast . . . sturdily built for years of profit-making use.**

Your Tractor Moves Sprinkler Line as a Unit . . . **without going through crops. Unique new "pivoting" action of WADE'RAIN Power-Shift wheel units produces revolutionary method!**



Automatic
"Pivoting Action"

R·M·WADE & CO.
SINCE 1865

1919 N.W. Thurman St., Portland 9, Ore.

Please send me FREE "FARM-FACTS" Information Form and Illustrated WADE'RAIN Literature.

Name .....

Rt. and Box No. .....

City ..... **State** ..... **W-M.**

MAIL COUPON TODAY

system. These fortunate spots have a sand-gravel subsoil with a water table which can be reached a few feet from the surface. The farmers are tapping this water supply with shallow, inexpensive wells. As their systems grow they sink more wells and tie them in so that a single pump can draw the water from a battery of wells.

In South Dakota, Thomas Martinson, who farms near Brookings, saw the advantage of this system after he had spent a good deal of money on conventional deep wells. After running tests on his underground water sources, Martinson had the Crosby Irrigation Company sink a five-point well system for him. It took them just five hours to put in the battery of wells and have them producing at the total rate of 300 gallons per minute. Martinson followed this up by adding several more well point stations on the farm located near the fields to be irrigated. He is now showing his neighbors how irrigation can increase corn yield by 50 bushels.

At Hancock, Wisconsin, the agricultural engineers from the University of Wisconsin are demonstrating to farmers one easy method used in sinking one of these wells. They have found that in this area a four-inch well, 30 feet deep, is the most efficient unit to use. They have also found that the cheapest way to put in a well here is by jetting. They start by digging a post-hole five feet deep. Into this they drop a five-inch pipe with a saw-tooth edge, which is used for digging. Inside is a two-inch pipe for carrying the water down, and the top is capped with a plate which has a welded entrance for the two-inch pipe. To sink the pipe, a pump is attached to the two-inch inside pipe and water is pumped into it at the rate of 300 gallons per minute. Sand, gravel, and water flow out around the pipe, the big pipe sinking rapidly into the crater. If all goes well the five-inch pipe sinks thirty feet in a matter of minutes. If they hit a snag or if the pumping is stopped for any reason, a different system must be used to finish the well. The cap must be taken from the top so that the jetting forces the water up through the five-inch pipe and out the top —in which case everyone takes a mud bath.

When the big pipe is down, the cap and small pipe are removed and the four-inch well point can be lowered into the larger tube. The bottom 28 feet of the well point pipe are slotted to permit water to enter; the top two feet are solid. With the four-inch well point pipe in place, lever and slip chain are used to pull out the big casing from around it, the sand and gravel close in around the slotted end, and the well is ready for operation.

Under ideal conditions, the University has sunk a 30-foot well capable of producing 80 gallons of water a minute in a half hour at a cost of less than $20 for materials. Ten of these wells spaced at 22-foot intervals, producing 800 gallons per minute, have been tied to one pump.

Rain Bird's famous swinging spoon-type arm, introduced in 1933, gave the nation its most productive farm hand! This was the innovation that made sprinkler irrigation practical across the nation, around the globe, on *all* types of farms and crops.

In the passing years, Rain Bird has continued its pace of leadership, engineering sprinklers to meet the specific requirements of every farmer and rancher. There's a Rain Bird sprinkler that will answer your irrigation problems.

Remember, if it hasn't the name, it just isn't the same. Specify RAIN BIRD!

Consult our research department today without obligation. Helpful literature free upon request.

NATIONAL RAIN BIRD SALES & ENGINEERING CORP.
AZUSA, CALIFORNIA

RAINY SPRINKLER SALES
609 W. LAKE ST., PEORIA, ILL.

RAIN BIRD SPRINKLER MFG. CO. (CANADA) LTD.
VANCOUVER 4, B. C.

new gain-boosting ingredient

Stilbosol

(DIETHYLSTILBESTROL PREMIX, LILLY)

now available for record beef feeding profits...

A POWERFUL, gain-building ingredient is now available to help cattle feeders get *more* beef at a *lower* cost. It's *Stilbosol.*

Stilbosol boosts gains as much as 37% on high-corn fattening rations. Feed costs have been slashed as much as 20%.

Scientific experiments and on-the-farm feeding trials indicate that *Stilbosol* may be the most important advance in animal nutrition since the introduction of antibiotics as growth stimulators.

This is welcome news to cattlemen. Margins are tight. The dramatic, new development comes at a fortunate time to keep beef feeding profits from slipping.

FASTER, CHEAPER GAINS WITH Stilbosol

Research conducted by Iowa State College, Eli Lilly and Company, various feed manufacturers, and experienced cattle feeders check closely on the benefits of *Stilbosol.*

Rations containing proper *Stilbosol* levels have put an extra ½ to ¾ pound of gain per day on fattening steers. Total gains have hit a record 3½ pounds per day for sustained feeding periods of 70 to 112 days.

Cost of gain has been cut from 2 to 4 cents a pound. Profit margins have been increased by as much as $25 to $30 per steer with the use of *Stilbosol*-fortified rations. That's good anytime. It's especially welcome these days.

BENEFITS MANY KINDS OF RATIONS

While most dramatic results have occurred with high quality steers on high-corn rations, *Stilbosol* has stimulated considerable gain with many types of rations. This has been true whether fed to steers or heifers for slaughter. And, true, when fed to feeders of varying weights above 600 pounds.

JUST A PINCH DOES THE JOB

Stilbosol is exciting news from every angle. A little goes a long way. Your beef supplement manufacturer will mix 10 pounds of *Stilbosol* carefully into a ton of his brand of beef feed. The feed will look the same. It just packs more growth power.

When steers or heifers are fed 2 pounds per head daily of such *Stilbosol*-fortified supplement, they will receive the proper daily level of the growth stimulant. As usual, you use such supplements in your regular beef fattening ration.

Because it is so powerful, *Stilbosol* will be sold only to professional feed manufacturers. Need for extremely accurate mixing prohibits its home use.

CARCASS GRADE AND SELLING PRICE EQUAL

Cattle receiving *Stilbosol*-fortified supplements have been bringing at least equal prices when marketed. Dressing percentages and carcass grades have been essentially the same as check lots receiving no *Stilbosol.*

Cattle getting *Stilbosol* appear normal and act normal in all respects but three. They eat a little more, gain a lot faster, and make their gains more economically.

COSTS A LITTLE MORE...WORTH A LOT MORE

Supplements containing *Stilbosol* are expected to cost an extra $7 to $10 more per ton than the same supplement without the gain-booster.

At $10 a ton extra, it'll cost you about 1¢ more per head per day. But that investment pays big dividends. Depending upon the kind of cattle and ration fed, *Stilbosol* has been returning $10 to $20 for every dollar invested in the growth stimulant.

When fed to steers on high-corn rations, *Stilbosol* boosts gains as much as 37% while slashing cost of gain as much as 20%. *Stilbosol* is truly called the new beef profit builder.

SELECT SUPPLEMENT IN SAME WAY

You still select the type of supplement you'd normally pick to do your particular job . . . whether it be complete, high protein, lower protein, or whatever. Just be sure that *Stilbosol* is added. Look on the bag or ingredient tag.

Stilbosol will make both a good and a poor cattle supplement more efficient. However, *Stilbosol* will never make a poor supplement the equal of a top-quality supplement that contains *Stilbosol*. *Stilbosol* merely piles its benefits *on top of* those originally built into the beef supplement.

Stilbosol is not a substitute for such nutrients as proteins, minerals, and vitamins. Rather, *Stilbosol* appears to improve the nutritive properties of any and all supplements and feeds consumed by beef cattle fed for the market.

ONLY FOR BEEF CATTLE FATTENING RATIONS

And, here's a very important point. *Stilbosol*-fortified rations are not now designed or recommended for any kind of livestock except beef cattle to be fattened for slaughter.

For the present, that rules out its use in rations for dairy cattle, beef breeding stock, sheep, swine, poultry . . . or anything else.

The sale of *Stilbosol* and its use in beef fattening supplements are subject to Federal Food and Drug regulations.

Feeding of the final *Stilbosol*-fortified supplement should be done with equal care. Follow the manufacturer's instructions. *Insist on beef fattening rations fortified with* Stilbosol.

Stilbosol

makes the difference

SO . . . BE SURE—Look for *Stilbosol* (Diethylstilbestrol Premix, Lilly) on the bag or ingredient tag of the beef fattening supplement you buy.

Stilbosol

(Diethylstilbestrol Premix, Lilly)

Lilly

Stilbosol is Eli Lilly and Company's trademark for Diethylstilbestrol Premix, Lilly. *Stilbosol* is compounded under license from the Iowa State College Research Foundation, Inc.

ELI LILLY AND COMPANY, AGRICULTURAL PRODUCTS DIVISION, INDIANAPOLIS 6, INDIANA

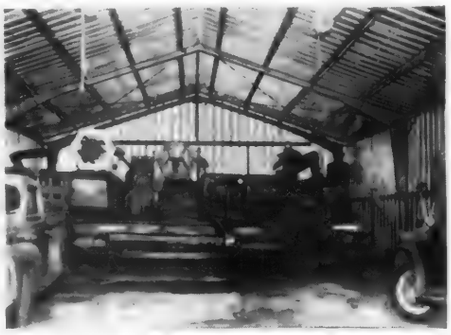
Butler doors give you plenty of clearance for wide, high equipment.

Every cubic foot is PAY SPACE in a BUTLER steel building

Figure the final cost—and a Butler machine storage building costs little—if any more than so-called cheap construction. And you'll thank your stars for years to come that you chose Butler. You'll save time and temper parking and maneuvering machinery . . . no poles to dodge in a Butler. Every cubic foot from wall to wall and floor to roof ridge is *usable space!*

Your machinery is ready to go when you need it. It works better in the field and lasts longer, because it is protected when not in use. Service it indoors too and save repair bills. A Butler building is snug and storm-tight.

So compare all costs—not just bids—for an erected building—fully equipped and ready for use. And don't forget a make-do building costs more to use. You'll see—lifetime, all-steel, all-useful Butler protection costs about the same as ordinary construction!



See your Butler dealer for full information about Butler steel buildings. Ask him for your free copy of Butler's new catalog: "New Uses for Butler Steel Farm Buildings." Or mail coupon below. Find out about fire-safe, wind-safe, weather-tight Butler steel buildings. There's no warping, twisting or dry rot; no need to paint or reroof.

For prompt reply, address office nearest you:
Butler Manufacturing Company
7378 East 13th Street, Kansas City 26, Mo.
978A Sixth Avenue, S.E., Minneapolis 14, Minn.
921 Avenue W, Ensley, Birmingham 8, Ala.
Dept. 78A, Richmond, Calif.

I'm interested in Butler steel farm buildings. Send me your free booklet, "New Uses for Butler Steel Farm Buildings" and the name of my nearest Butler dealer.

Name_____

Address_____ County_____

P. O._____ State_____

BUTLER

Manufacturers of Oil Equipment
Steel Buildings • Farm Equipment
Dry Cleaners Equipment
Special Products

Factories located at
Kansas City, Mo. • Minneapolis, Minn.
Galesburg, Ill. • Richmond, Calif.
Birmingham, Ala. • Houston, Texas

STILBESTROL

(*Continued from page* 49)

hay. An additional 33 head got the same ration with 10 milligrams of stilbestrol daily. After a 75 day run, the hormone cattle gained 26 pounds per head more on the same amount of feed. Extra daily gains came to .35 pound, with cost of gain dropping 3½ cents a pound. Andersen says, "Since then, I've been getting gains of between 2¼ and 2½ pounds a day from stilbestrol in a high roughage ration. No abnormal effects have showed up in either steers or heifers."

Nor did side effects occur on the Libertyville, Illinois, farm of Dr. M. J. Brinegar. He split 50 steers into two even groups. Both got a full feed of ground ear corn with 3 or 4 pounds of medium quality hay and 2 pounds of supplement. The check lot gained 2.29 pounds a day at a feed cost of $24.77 a hundred pounds of gain. The group receiving 10 milligrams of stilbestrol in the supplement hit an average daily gain of 3.07 pounds at a feed cost of $19.34 per hundred. The increased gain amounted to .78 pound, or 34 per cent increase, with over 5 cents saved per pound of gain. Both lots sold on the open market at medium to high choice, with the stilbestrol steers bringing 50 cents more per hundred.

Ralph McCall of Barrington, Illinois has shed most of his skepticism, though he hasn't yet sold his steers. His attitude is cautious. He says, "I'm not jumping into the stilbestrol feed trough with all four feet. But I'm not being crowded out either. I put 16 head on test, 16 on my regular ration of corn and hay and 24 per cent supplement. After all this talk about high tail heads and such, I get uneasy every time I see a steer stretch, but I haven't had any trouble yet. The stilbestrol group look a lot further along than the others. I'll make up my mind when they go to market—they've been on feed for three months now. We weigh them every 28 days so we don't kid ourselves. While they were getting up on feed the first 28 days, the hormone steers gained 0.3 pound more, the second 28 days 0.4 pound more, and this last 28 days over 0.6 pound more. The average daily gain to date is 3.11 pounds for the stilbestrol steers, with 2.68 pounds for the rest."

It All Depends

Are such results typical? "Not so," one nutritionist has pointed out. "Certainly not under all circumstances. We have yet to put our finger on the reason stilbestrol works wonders in some feeding programs but gives mediocre results in others. The response varies in different kinds of animals. While some farm trials have proved more profitable than the best Iowa trials, experiment station workers at Iowa State College have made no claims that stilbestrol will produce surprising gains under all conditions. They have merely presented the facts. Unfortunately, some of

the facts have been ignored by many people. There is no doubt that stilbestrol provides growth stimulation and increases feed efficiency. But a calm examination of all the Iowa tests is in order. In about half the trials, appetite was not stimulated at all. Reduction in feed costs amounted to only 4 or 5 per cent in some of the trials. However, these benefits may be enough to pay off. The startling greater gain of 37 per cent with a 20 per cent saving in feed was achieved with only eight head of steers."

In the Feedlot

After a large number of stilbestrol-fed cattle have appeared on the butchers' racks, more will be known of the limitations of hormone feeding under farm conditions. Right now it is clear that age, sex, castration and both type and amount of feed complicate the results.

Where does the average farmer come in? Only cattle feeders can benefit from stilbestrol feeding at present. If it does half as good a job for them as it has done in the better test runs, uses for the drug are bound to widen. Incompleted tests with sheep already look promising, though tests with hogs do not. At this writing, it is well to be certain of the DON'TS of stilbestrol feeding. There are five of them.

1. *Don't* feed stilbestrol to poultry, sheep, hogs or dairy cattle.
2. *Don't* feed stilbestrol to beef bulls, sucking calves or to any female beef to be kept for breeding purposes.
3. *Don't* try stilbestrol on show steers without an understanding of the risks involved.
4. *Don't* feed more than 10 milligrams of stilbestrol per head per day.
5. *Don't* feed stilbestrol the last two days before marketing. This will prevent traces of the drug from remaining in the slaughtered animals, though the precaution is considered unnecessary by some state officials.

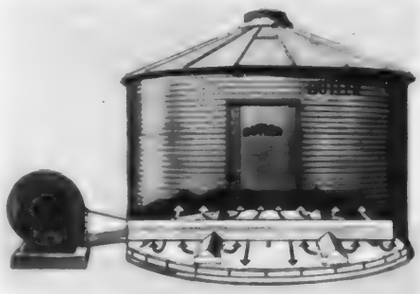
You can't buy stilbestrol itself: proper mixing by farmers is impossible. It is becoming available in more and more brands of supplement, suitably mixed for safe usage. One pound of the supplement, as originally placed on the market, contains 5 milligrams of stilbestrol, an amount which has been shown to give fair beef gains. Two pounds of the supplement, containing 10 milligrams of the drug, proved the best rate of feed in Iowa trials. Feeding larger daily amounts per head is not recommended. Eventually, other concentrations of stilbestrol, as low as 2½ milligrams and as high as 10 milligrams per pound of supplement, may soon be available, suitably identified on the tags. This will allow adjustment in the amount of supplement to fit various ration programs. Supplements should be chosen with

Match your exact grain storage needs with Butler bins. Choice of five sizes—1,000, 1,330, 1,650, 2,200 and 3,276-bushel capacities.

PLAN NOW to Store Your 1955 Crop safely in BUTLER bins

You can be sure all your 1955 crops will be stored *safely*—clean, dry and bright—when you buy Butler steel grain bins. Now is the time, well ahead of harvest, to make your crop storage plans and avoid last minute harvest-time rush.

Butler bins are precision punched and formed. They are easy to erect. They are weather-tight, fire-safe, bird and rodent-proof. Your grain stays "seed clean," bright and dry for highest grade and top quality feed. Galvanized construction assures you many years of dependable, low-cost storage. Butler bins qualify for ASC storage facility loans.



See your Butler dealer now about Butler bins for new crop storage and Butler Force-Aire crop conditioning equipment.

Butler Force-Aire crop conditioning equipment circulates natural, unheated air evenly throughout your stored crop, holds moisture content at safe storage levels, helps control insect activity. You can install Butler Force-Aire in your present bins and granaries . . . protect *all* your crop.

BUTLER

Manufacturers of Oil Equipment
Steel Buildings • Farm Equipment
Dry Cleaners Equipment
Special Products
Factories located at
Kansas City, Mo. • Minneapolis, Minn.
Galesburg, Ill. • Richmond, Calif.
Birmingham, Ala. • Houston, Texas

For prompt reply address office nearest you:

Butler Manufacturing Company
7378 East 13th Street, Kansas City 26, Mo.
978A Sixth Ave., S.E., Minneapolis 14, Minn.
921 Avenue W, Ensley, Birmingham 8, Ala.
Dept. 78A, Richmond, California

I'm interested in Butler bins and the new Butler Force-Aire drying equipment. Please send me more information and the name of my nearest Butler dealer.

Name_____

P. O._____

R. F. D._____ State_____

ATTENTION STOCKMEN!
THERE ARE MANY REASONS WHY
BOWSHER PORTABLE FEED MILL
IS BEST
It's a rusher on ear corn, shucky corn, shelled corn and corncobs, capacity up to 220 bu. per hour.
CATTLE PREFER BOWSHER GRIND
Gives cattle granular product WITHOUT DUST! Gives FASTER LIVESTOCK GAINS.
BEST INSURANCE AGAINST BLOAT
THE GREATEST IMPROVEMENT IN GRINDER CONSTRUCTION
• • • •
TRIPLE ACTION CUTS • CRUSHES GRINDS
The Original Cone Shaped Burr Feed Grinder
CUTS LABOR COST IN HALF
Hopper adjustable to three positions, spout swings in complete circle, saves shoveling.
Satisfaction Guaranteed... Write today for circular and nearest dealer.
BOWSHER
With P.T.O. Drive
N. P. BOWSHER CO.
915 South Webster Street
South Bend 21, Indiana

Get the facts on the new *Jacuzzi* JET PUMPS

Save on Initial Cost

Jacuzzi's new low-cost water systems give more pump for your money. Get that extra water and pressure you need for a modern household without paying for the bigger motor and extra electricity needed on other pumps.

Save on Maintenance

Get peace of mind. Jacuzzi's new Deepprime Jet for wells to 300 feet is the only deep well jet that can reprime itself —even if your power fails or if your well gets "pumped down" or if air enters your pumping line. Adjusts automatically to changing water levels, too. No hard-to-reach motor or moving parts in the well to clog or corrode. Everything within fingertip reach. Nothing else like a Jacuzzi! Don't settle for less.

Get the facts! Be choosey... buy Jacuzzi! Send coupon for our new fact-filled bulletins.

JACUZZI Bros. Inc.
4100 Bayless Ave., St. Louis 23, Missouri
Please send bulletins and name of nearest dealer. Depth to water level at my place is.....ft.

Name_____

Address_____

their protein and other nutritive qualities in mind, as they would be if stilbestrol were not involved.

Two factors of the Iowa test runs should not be lost sight of: all but one of the tests were short feeds; all of the livestock were high-quality feeders. There is reason to believe that in a long feed, steers on standard rations will tend to catch up with hormone-fed cattle. Some investigators are of the opinion that greatest returns will come from confining stilbestrol feeding to the last month or two of the finishing period. Not much is known as to how grade and dressing percentages will compare when cattle are on extended hormone feeding. Results have been very satisfactory with high-grade cattle from 600 to 1,000 pounds when started on feed. But results are incomplete with light, quality feeders and with more common grades of cattle of all weights.

Full Feeding

Stilbestrol has increased gains and reduced costs in all types of fattening programs, but the biggest response comes when the drug is combined with full grain feeding. In one test, steers were fed two pounds of soybean oilmeal supplement, with regulated amounts of silage and hay. They were given all the ground shelled corn they wanted. This group of steers averaged 12½ pounds of corn per day. When 5 milligrams of stilbestrol were added to the supplement, corn consumption went up to 14½ pounds per steer per day, indicating that appetite was increased. Daily gains jumped from 2.23 to 2.64 pounds. However, when 10 milligrams of hormone were added to the same rations, the amount of corn eaten did not increase, but daily gains were increased to 3.06 pounds, showing that the extra stilbestrol, while not stimulating appetite further, did cause more of the consumed feed to be turned into meat. Gains were ⅓ greater, appetite went up by 15 per cent and savings amounted to ⅙ of the feed bill. Feed costs per pound of gain were reduced by almost 4 cents.

Roughage Programs

In high roughage programs, stilbestrol is less efficient. Cattle on rations consisting of 25 pounds of cornstalk silage, with 3 pounds of shelled corn plus supplement, gained 1.6 pounds daily. Addition of the hormone to the ration increased daily gains to 2.0 pounds. Repeated tests have shown inconsistencies. In one trial, adding 5 milligrams of stilbestrol to high roughage feeds resulted in average extra gains of 10 per cent, with feed saved also averaging 10 per cent. Increasing the stilbestrol to 10 milligrams daily improved gains 19 per cent but saving in feed remained at 10 per cent.

Cattle on rations consisting of 65 pounds of shelled corn to 35 pounds of ground cobs, plus stilbestrol supplement, made slightly better gains than cattle on the

Hammer down your fencing cost! Fence faster and easier... save time and labor with the revolutionary Danuser Post Driver. Tractor-mounted, power driven, one-man operation. Single lever controls broad-faced 200 lb. driving weight. Delivers 25 blows per minute. Quickly drives steel or small wood posts. No splitting or "mushrooming" tops. Pivot adjustment for leveling on uneven ground. Tested and approved by tractor manufacturers. Also available as a trailer unit.

Write for literature pertaining to your model tractor, or specifications on TRAILER-MOUNTED DRIVER.

Manufactured by

DANUSER MACHINE CO.
505-09 East 3rd Street • Fulton, Missouri
"Contributing to Farm Mechanization"

Effective FARM MANAGEMENT

can apply successful business principles and proven scientific methods to your farm. A professional farm manager is ready to organize and supervise your farm operation to assure maximum returns.

Accurate FARM APPRAISALS

based on sound judgment of values, prices, yields, soil productivity and management will provide a basis for buying, selling and taxation of farms or ranches. A trained, experienced rural appraiser can do the job for you.

Write today for full information and list of Professional Farm Managers and Rural Appraisers for your area. No obligation, of course.

H. E. Stalcup Secy.-Treas.
American Society of Farm Managers and Rural Appraisers
Box 67, Storm Lake, Iowa

World's Finest Portables! Exceptionally Rugged Heavy-Duty Model . . . **priced right!** Extra-wide 18" to 22" galvanized steel sections. Extra-heavy double No. 62 chain. 4-roller power-elevated derrick. Roller bearings throughout. Also Big 20" wide Model at AMAZING LOW PRICE. Elevates everything — baled hay, corn, small grain. Write for FREE Catalog and Prices **Today!**

MEYER MFG. CO.
BOX 2752 MORTON, ILLINOIS

same ration without stilbestrol. But the gains were not as cheap nor as rapid as with cattle on a standard full feed of corn without the hormone. Oddly enough, the cob and stilbestrol-fed steers graded higher than those fed heavy corn.

When steers are being lightly wintered to gain about a pound a day, for cheap gains on later pasture, the cost of winter gains can be reduced about 3 cents a pound by adding stilbestrol to a heavy roughage ration. The supplement should preferably be mixed with chopped hay or ground cobs to add bulk. What effects the feeding of stilbestrol to such cattle will have when they go on pasture is not certain, especially in view of Mackay's experience. One limited test, involving irrigated pastures in California, showed no benefits from stilbestrol to grass-fattened stock unless they were also given about a half feed of grain.

More knowledge is needed of the role of different kinds of protein supplements in combination with stilbestrol. In most of the tests, soybean oilmeal was the major ingredient of the supplements. In one Tennessee trial, urea was used, and it was found that cattle on all urea protein, plus corn, grass hay and molasses gained only 1.8 pounds a day. Adding stilbestrol to the ration brought gains up to 2.1 pounds daily.

Availability and Costs

The addition of stilbestrol to any supplement in no way changes its keeping qualities. At present only one company produces the drug for feeding purposes, Eli Lilly and Company, of Indianapolis. It is supplied to feed manufacturers under the trade name Stilbosol, a pre-mixed or cut-down form for safety in handling and for greater certainty of even distribution in finished supplements.

Most supplements cost around $8.00 extra per ton when Stilbosol is included, though increased efficiency in production and competition may eventually lower the price. If two pounds of the supplement are fed daily, the extra daily feeding cost per steer will be under 1 cent. An additional gain of ½ pound gives about 10 cents for each cent spent on stilbestrol.

The supplement may not yet be available in all areas. Feed manufacturers are on round-the-clock schedules to meet demands. Some state officials were temporarily on the fence regarding it, despite the federal decision to permit its sale. Now, almost every state has approved stilbestrol. When permission is given for a drug to be sold, this does not mean that the government has in any way given its endorsement or approval. It merely means that the drug officials have decided that on the basis of evidence submitted by the manufacturer, a drug is safe for the particular use and in the manner and the amounts intended by the maker. When carelessness or abuses in the application of drugs occur, legislation is bound to follow.

Low cost
STABLE BEDDING
Always available *when you own an economical*
FITCHBURG CHIPPER

That's right—a Fitchburg Chipper will give you an ever-ready, low cost supply of the finest mulch, poultry litter and stable bedding, just by converting waste wood on your farm into valuable wood chips.

Not only can you convert prunings, thinnings, fence row clearings, etc., into a useful, money-saving product, but your Fitchburg Chipper makes it easy to clean out woodlots—give new life to young trees, reduce the danger of fire.

Fitchburg Chippers are ruggedly built. They are designed by engineers for busy, trouble-free service. Every model, regardless of capacity, has an exclusive built-in feature which permits chipping of larger size wood without extra power. It's the patented Fitchburg Safety Spring so essential to smooth efficient operation.

And you can buy a Fitchburg Chipper for as little as $960.

EXTRA CASH FOR YOUR SON

Help your son earn $5–$8 per hour right near home. Many boys on farms use Dad's Fitchburg Chipper to help earn their way through college or ag school, doing custom chipping for neighbors and nearby municipalities. Learn more about the Fitchburg Chipper! Send the coupon for free folder today.

FREE FOLDER
Gives all the facts
Money-making suggestions, specifications, model numbers, diagrams, USDA quotes on use of chips for mulch, litter and bedding. It's all in this free folder—send for your copy now!

FITCHBURG ENGINEERING CORPORATION
Dept. F-5, Fitchburg, Mass.
Please send my free Fitchburg Chipper Folder

*Name*_____
*Address*_____
*Town*_____ *State*_____

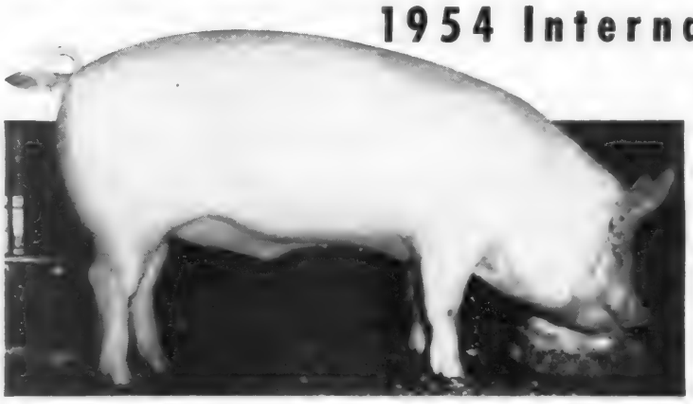
YOU CAN BUY
mojonnier BULK COOLERS
WITH CONFIDENCE

Built-in quality insures complete satisfaction over the years. 18-8 all stainless steel construction, including internal bracing members, Cools milk quickly to 34°-36° F. with lowest possible power cost. Simple refrigeration system guarantees service-free operation. Low pouring height and rounded bottom makes cleaning easy. Every Mojonnier Bulk Cooler has same cold-wall surface for use interchangeably on skip-day or every-day pick-up. Write for Bulletin 290.

MOJONNIER BROS. CO.
DEPT. FQ-1, 4601 W. OHIO ST., CHICAGO 44, ILL.

mojonnier
LOW BULK COOLERS

RESERVE CHAMPION at the 1954 International



OSU's Champion Medium Weight York Barrow

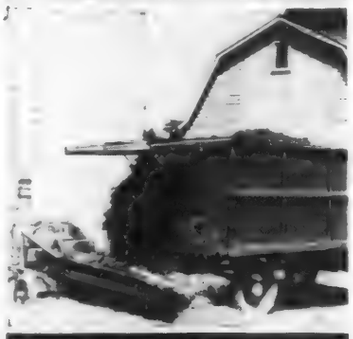
Sacco V-19 Mineral Helps to Produce Champions

In '54 again, Ohio State University won Champion awards in many classes, including individual and pen exhibits at the International Livestock Show. OSU's prize-winning exhibits, year after year, show that good feeding, good breeding and good management are a winning combination. Make them win prizes or profits for *you*. Keep your rations in mineral balance by having Sacco V-19 mixed with all your feeds. Sacco V-19 is complete, balanced and fortified with Vitamin D.

SACCO V-19 MINERAL FEED

THE SMITH AGRICULTURAL CHEMICAL CO.
Plants at Columbus, Ohio; Indianapolis, Ind.; Saginaw, Mich.; Holland, Mich.; Carey, Ohio.

TAKE PASTURE TO STOCK with HELIX UNLOADERS



Save Chore Time... Cut Feeding Costs 1/2

★ Unloads at Front Where You Can Watch It

★ Adapts Readily for All Forage Chores, All Silo Filling

Make your forage wagons do more for each dollar invested. Use a Helix side delivery Cross-Conveyor to speed up feeding chores . . . save time. New design feature permits removal of elevator for filling low bunks or working in cramped quarters.

And at silo filling time (either trench or upright) or when hauling chopped hay, you'll find a Helix Rear-End Unloader the most valuable implement on your farm.

One basic machine does both jobs.

Get the Helix unit your farm operation most needs! Or get a Helix All-Steel Forage Box that is ready punched and drilled for 2-Hour conversion to an automatic unloader.

A new manure spreader attachment is also available . . . and for bunk-feeding grains, see the new inexpensive Helix Auger Unloader.

Ask your Helix dealer about the Helix easy to install, easy to remove Barn Cleaner, too.

Clip This Coupon

HELIX CORPORATION
CROWN POINT, INDIANA

For FREE literature, simply print your name and address below and mail to us at Dept. 2-1.

Name.....

RR.....

Town.....State.....

Stilbestrol in Pills

Stilbestrol is not new on farms. Its use first showed up in the broiler house, over ten years ago. Small pellets of the female hormone, injected under the neck skin of cockerels eliminated the need for castration, hastened gains and hiked poultry profits during and since the war years. In veterinary experiments, implants of the pellets caused unbred dairy heifers to come fresh, and milk yields were improved in older cows. Results were inconsistent, but one fact stood out. Even though fed very little grain, the dairy cattle injected with stilbestrol all gained weight fast, averaging one to three pounds a day on normal dairy rations.

That looked good to meat producers. Across the nation, in the past three years, stilbestrol implants have been tried on sheep, hogs and beef. The effects have been good, or bad, but never indifferent.

Appetites were here increased, there depressed. Gains were astonishing or insignificant. Abnormalities were frequent. There were numerous reports of steers and heifers developing udders, with heifers producing milk. High tail heads and constant bulling were common. In treated sheep, reproductive organs developed abnormally and considerable losses resulted from rectal prolapse and kidney blockage. Treated gilts developed udders and swollen vulvas.

The real let-down came at slaughter time. In most of the implant trials with beef, sheep or hogs, carcass grade was sickeningly lowered.

Oral Feeding

The ghosts of pellet implanting have carried over in the minds of both farmers and research men. The Iowa experiments were the first to employ the use of stilbestrol in feeds for beef cattle, though the drug was tried in poultry feeds a number of years ago with trifling success. No reliable cases have yet come to light where oral feeding of stilbestrol to beef cattle has greatly changed carcass grade or where serious abnormalities have been observed, though Purdue workers report slightly lowered carcass grade and minor side effects in one lot of trial steers.

It is difficult to nail down some of the rumors, and some of the facts as well, on stilbestrol feeding. More than a few feeders of high priced cattle are keeping their fingers crossed. Research men will breathe a little easier when the groundwork under stilbestrol is a bit more firm.

Should you await the final word on stilbestrol or should you shoot the works right now? The smart operators are not putting all their eggs in one basket. Many are splitting their lots, testing the drug against standard rations, proving to themselves how hormone feeding can best suit and benefit their feeding programs.

(*Continued from page 57*)

borhood. One place with very good soil actually needed only one application: the rest of them could have used as much water as we did and used it profitably.

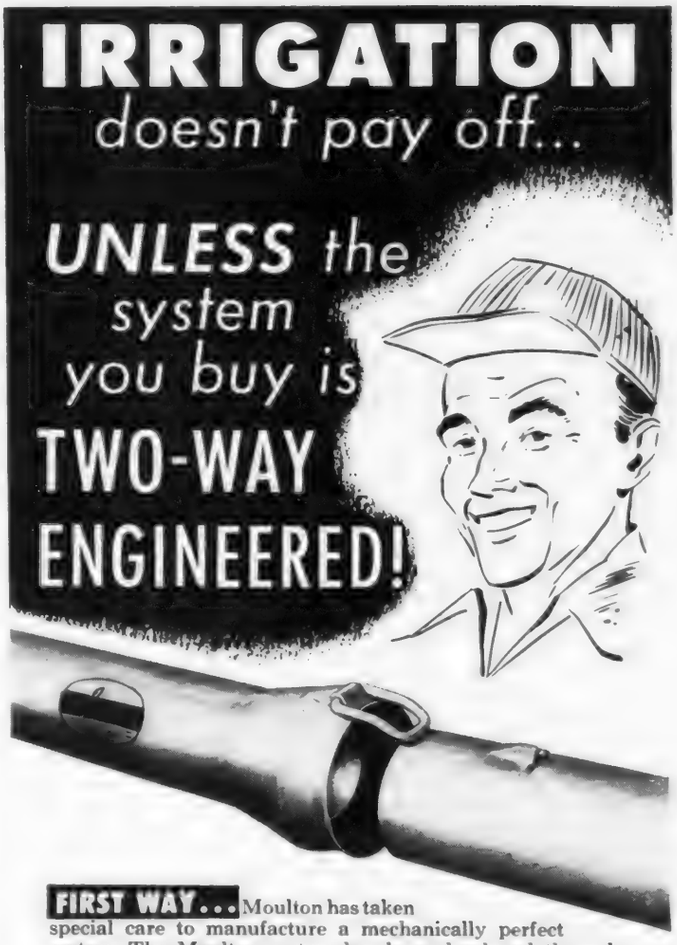
"I think I can speak with authority about the profit involved because we kept a check on it and compared it with a neighbor across the road who has just as good land as ours, used just as much fertilizer, and is just as good a farmer. We averaged 2,379 pounds to the acre on our place and got $59.32 a hundred for it when we marketed it. Without water, he raised only 1,550 pounds to the acre and got $52 a hundred. The difference on the home place alone was about half the cost of the whole system. If you put it on an acre inch of water basis, we could have charged $160 for four applications of two inches each and the difference between the irrigated and unirrigated would have amounted to over $700."

In the Dakotas and Nebraska where farmers irrigate potatoes, alfalfa, and sugar beets in plots that run from 10 to 60 acres, most of the systems are rented on a daily basis. The daily charge runs anywhere from $35 to $200 plus a service charge for hauling and setting up the equipment. The exact amount of the rental is figured on the basis of the cost of the equipment, just as it is in certain parts of New England where systems are rented for 10 per cent of their list price for each month's use. With rents based on the cost of the system, a renter can hold down the price he has to pay by getting the least expensive equipment which will do the job. This is a tricky business, however, for using a minimum set-up may increase his labor costs far beyond the rental saving. A Nebraska farmer, for example, rented a two-lateral system for watering corn, but insisted that he didn't need such refinements as a control tee or shut-off valves at the take-off points. The result was that he had to shut the pump down every time he moved a lateral. This meant that he had to walk to the pump and shut it down, change the lateral, walk back to the pump and start the engine and prime the pump. In the meantime his main line and the other lateral had drained, losing a lot of water and causing some puddling. His shut-down time for each change, and he moved laterals four times a day, amounted to an hour and a quarter which, in rent alone to say nothing of the extra labor, would have more than paid for the extra equipment. This same problem comes up with farmers who buy systems, and emphasizes the real need for a careful engineering job which will design a system to fit the farm at the lowest possible cost, but won't sacrifice labor and operating costs in order to save a small amount on initial cost of equipment.

Can You Rent Equipment When You Need It?

Most farmers wait until the leaves start curling with thirst before they try to rent an irrigation system. As one of them put it, "It's awfully hard to stick your hand in your pocket for a few hundred dollars for irrigation when there's a cloud in the sky—even if it's only a little one." When hope is exhausted they rush to the dealer and try to rent a system: sometimes they're disappointed. The farmers who had less hope and the occasional farmer who planned ahead and put in a request for the equipment, have already rented the available systems and the man who was too optimistic must wait his turn while his crops suffer.

One of the farmers who doesn't believe in taking a chance on getting equipment when he needs it is Earl Frays, of Scotts, Michigan. Frays is convinced that irrigation is a must in the Midwest, but would rather have the work done by a custom operator than buy a system because of the labor involved. In January, 1954, he talked it over with his dealer, Paul Kline, and agreed on a schedule of irrigation for the coming year. Kline, who was buying a system to water pickles, corn, alfalfa, and soybeans on his own 220-acre farm, was able to plan the layout so that it would do for both farms. They agreed that Frays would be responsible for developing the water and that Kline would irrigate a minimum of 80 acres and not more than 125 acres of corn on Fray's farm.



FIRST WAY... Moulton has taken special care to manufacture a mechanically perfect system. The Moulton system has been developed through many years of actual engineering experience in solving farmers' problems all over the world. Each part is designed to do its job efficiently — as part of a unit — a unit that will give you lasting, trouble-free service and top efficiency!

THE MOULTON QUICK COUPLER is equipped with a positive-seal gasket that is efficient even when used under extreme conditions. Locking links and convenient carrying handles give you easy coupling and uncoupling — *without touching the coupler*! Another feature you will like is that all couplers are *welded right on the pipe* — nothing to attach or adjust — no parts to work loose or become lost. Also Moulton's lightweight aluminum pipe gives you maximum portability. This means you get greater coverage — with less equipment — *with a smaller investment!*

SECOND WAY... With some systems the engineering stops with the mechanical aspects of the system — but NOT WITH MOULTON! Moulton's second phase of engineering starts right in the field — *your field*. Before Moulton sells an irrigation set-up they send a qualified engineer out to your farm site to get the *facts* and *figures*. He actually plots your land on a special chart — he asks many questions about your crops — your problems — your plans for future expansion. All these facts are then carefully analyzed to make sure the equipment you get will do the job properly. Different pumping units, pipe lengths, pipe sizes are all considered. After the engineers at the plant are fully satisfied that they know what you need they submit a price estimate on *how little it will cost* to give you a system that will provide maximum efficiency — maximum economy — NOW — and in the FUTURE!

When you consider irrigation — consider a TWO-WAY *completely* engineered system! Contact Moulton manufacturers of TWO-WAY engineered systems that make irrigation PAY OFF!

See your nearest Moulton dealer or write Dept. F-2.

FARM TESTED

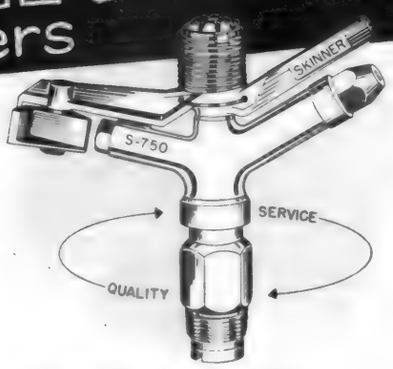
MOULTON IRRIGATION CO.

WITHROW, MINNESOTA
DIEHLSTADT, MISSOURI

Over 50 years manufacturing

sprinkler irrigation equipment

SKINNER sprinklers



. . . for over 50 years, The Skinner Irrigation Company has been manufacturing irrigation equipment for everything that grows—from equipment scientifically designed for the delicate humidifying of orchids to equipment built for the rugged requirements of banana and sugar cane plantations.

Through this entire period, all Skinner equipment has been designed and manufactured on the premise of distributing water uniformly and in the most effective and efficient manner—a premise that has established a 50-year-old reputation for integrity, quality and know-how.

Skinner agricultural sprinklers of today are a direct result of this vast experience. You buy them with confidence because they are . . .

- Field tested under field conditions
- Designed for uniform water distribution
- Ruggedly constructed
- Driven by "extra-power" movable deflector
- Protected from abrasive sand
- Simple in construction with a minimum of moving parts

SKINNER

The SKINNER IRRIGATION CO., 200 Water St., Troy, Ohio

HERE THEY ARE! For Sprinkler and Ditch Irrigation

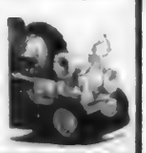
New! RAINMASTER TRAC-TOW PUMPERS

Now irrigate by new, lower cost, more convenient method of using tractor power.

Finest line of **REALLY ECONOMICAL** tractor-powered pumpers in America. Trac-Tow is especially designed for — rather than adapted to — ditch and sprinkler irrigation. **OVER ONE ACRE INCH OF WATER PER HOUR** — at less cost — with less attending care. Use P.T.O. on 20-30 H.P. Tractors. Integral speed increaser, enclosed impeller, rotary shaft seal. LEARN HOW TRAC-TOW CAN SAVE YOU MONEY.

MODEL DP-6 Ditch Pumper

Offers brand new use of 20 H.P. tractor for surface irrigation or drainage. Provides 2¼ Acre Inches Water Per Hour. Furnished in ready-to-run package — no extras to buy — no parts to assemble.



Mail Coupon for FREE Literature

Construction Machinery Co., Dept. F-1, Waterloo, Iowa

Gentlemen: Please rush me FREE information on new TRAC-TOW ☐ Ditch Pumpers ☐ Sprinkler Pumpers

NAME _____

ADDRESS _____

CITY _____ STATE _____

A Complete RAINMASTER Line 16 Models, 100-1400 G. P. M. Write for Details

They further agreed that Kline would apply one and one-half inches of water every ten days if it was necessary. The determination of necessity was not left to chance: they buried moisture-testing blocks in the fields and agreed that when the moisture meter showed that the soil was down to 60 per cent of available moisture, irrigation should start. Kline agreed to use proper care in applying the water, but was relieved of any responsibility for crop damage.

With such a schedule, Kline was able to put one man on irrigation full time to keep the system running and shift laterals. When a main line or the whole system had to be moved, two other men pitched in. With big acreage to water, continuous use of equipment, and trained labor to manage the system, Kline's costs were low and he was able to do the job for $5 an acre inch plus a bonus on the crop if the corn yield went over 125 bushels to the acre.

Most dealers agree that they could afford to charge less for their equipment if the renter would sign up in advance and insure them continuous use of their equipment. As one of them put it, "We have a lot of money tied up in pipe, sprinklers, and pumps and if it's only used once or twice in a season we have to charge accordingly. After all, the minute you start running water through the pipes, it becomes second hand equipment." This tight scheduling of equipment use is the key to a number of irrigation companies which have been formed by farmers. Three or four farmers organize and buy a system which can be used on all their farms. Each develops his own water supply and they agree in advance to a schedule which will get maximum use from the equipment. In some cases they hire labor to do the irrigating. The result is that their overhead and operating costs are cut to the bone.

What do the dealers who have rented equipment think about this business? Most of them feel that there is not much money in renting equipment, but that it *does* introduce irrigation to farmers. Many of them make a practice of allowing a generous part of the rental to apply on new equipment if the renter decides to buy a system of his own. All of them have found that there are more headaches in renting than they ever suspected.

As Charles Lake, a dealer in Bakersfield, California, said: "You have to be in the business to know some of the problems. We rent a farmer a system and with it a pump and an engine with a self starter. The pump unit always goes out with a brand new battery and it comes back with a battery, but not always ours. Ours is firmly connected to the farm hand's 1939 Plymouth. Can you start a fight with a farmer who returned your pump complete with a battery?"

SPAN OF LIFE

(*Continued from page* 79)

of yields.

But Jesse is a cautious man, not one to take up with a new thing just because it is new, or go off half-cocked. "It's just a flash in the pan," he said to himself, and went on with his old open-pollinated seed. He always saved all his own seed corn, large, fat, hard ears, and he just couldn't bring himself to sell it for horse corn and go out and buy the new seed at fancy prices. "I want to see 100 bushels to the acre before I believe it," he said.

Then one year he ran out of seed corn and had to have some quick to finish his planting. He went to the seed dealer in Felicity; the only seed the dealer had was a bushel of hybrid and Jesse had to take it. His hybrid corn made 60 bushels to the acre that year, his old corn barely 40.

Then, in the fall of 1932, working too long and too late to be careful, Jesse lost a hand in a corn shredder. The next months were tough for him. "I thought I was done for," he says. "Couldn't see how I could do my farming with one hand." But he stuck to it and worked things out and learned how to get along. His neighbors say Jesse Metzger does more work with one hand than most people do with two. "He doesn't complain; never did," says Blanche. "The only thing he can't do with one hand he could do with two is button up his shirt sleeve." Jesse says that the loss of his hand was somewhat a blessing in disguise. "I couldn't manage a team very well with one hand," he says, "so I teamed up with my brother-in-law and we bought one of the first tractors in the county. I found out that machinery could save me a lot of backache."

It was when his son, Wayford, came back from college that Jesse fully realized that progress had come to the farm. When the children were still in diapers he and Blanche had planned a college education for them. "It was just natural that we would want better for them than we had," he says. "The more you can use your head the less you have to use your back."

Wayford brought back from school a parcel of new ideas about farming that sometimes astonished, sometimes frustrated Jesse. Wayford calmly but firmly set out to modernize both his father and the farm. For one thing, he persuaded his father to more than double his fertilizer.

Jesse had brought with him to his farm an abiding faith in manure. His father and his grandfather, from a solid Pennsylvania Dutch county, believed that the panacea for all ills of the land was more manure. Jesse was like that, too, until Wayford began to talk straight nitrogen and three and four hundred pounds of mixed fertilizer to the acre. Jesse always used a little dab of fertilizer ever since he had been bested three years in a row by his neighbor. "That was soon after the first world war," said Jesse. "My corn always beat his, but he started to use a little fertilizer—maybe

More Friable, Mellower, Higher Producing Seed-Beds . . . Yours With

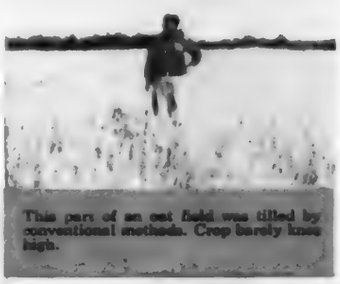
The SEAMAN ROTARY TILLER

The Self-Propelled SEAMAN TILLER
7 ft. wide. Gasoline or diesel powered.

Your first hour with the SEAMAN TILLER proves the superiority of the seed-bed. You can tell by the feel of a handful of the soil — a perfect tilth — medium, fine or coarse, exactly right for your soil and crops.

- ★ Better soil aeration
- ★ Plow sole elimination
- ★ Holds more moisture without "ponding"
- ★ Complete uniform mixing of fertilizers and cover crops —
- ★ All pay profits in more abundant yields on every acre.

At harvest time you and your pocketbook will be glad you decided on SEAMAN-Tillage. And every year your land will produce more, for SEAMAN-Tillage *constantly improves your soil.*



This part of an oat field was tilled by conventional methods. Crop barely knee high.

Section of same field tilled with a SEAMAN. Heavy, abundant stand is over waist high. Fertilization was uniform throughout the field.

The husky SEAMAN TILL-IT operates from P.T.O. of most 2-3 plow tractors. 3 ft. tillage width.

What Can ROTARY TILLAGE Do for YOU

Write for the name of your nearest SEAMAN dealer. Send for your copy of this big, colorful, descriptive broadside "What Rotary Tillage Can Do For You". Tells the complete SEAMAN TILLER story. Fully illustrated with job scenes. Send a postcard today.

SEAMAN-ANDWALL CORPORATION
331 North 25th St.
Milwaukee • Wisconsin

MORE MONEY IN THE BANK for YOU!

RAISE **MILKING SHORTHORNS** for **GREATER PROFITS**

With economic conditions tightening up you NEED Cattle that have enabled farmers to put money in the bank for years and years. Milking Shorthorns are DEPENDABLE. They've made money for your Grandparents and their Grandparents before them! That's because they are the most PRACTICAL breed in existence. They convert home-grown feeds and roughage into milk, meat and butterfat most economically. Milking Shorthorns are BIG, STRONG, RUGGED. You get 4% milk and greatest salvage value of all milk breeds. Their TWO-WAY bargaining power plus greater saleability of calves means greater security under ANY world conditions. Subscribe to MILKING SHORTHORN JOURNAL now! Published monthly. Only $1.00 for six months, $2.00 for full year. $5.00 for three years. Send money TODAY or write for FREE facts!

FREE FACTS

AMERICAN MILKING SHORTHORN SOCIETY
313-FQ S. Glenstone Springfield, Missouri

INDIAN

FIRE PUMPS WILL SAVE YOUR FARM TOO!

You can't fight fire empty handed and the fire dept. may arrive too late. That's why Fire Chiefs urge farmers to keep **INDIAN FIRE PUMPS** handy in barn and house.

Keep one **INDIAN** near kitchen and another just inside barn door. **INDIANS** use only clear water — no chemicals. 5 gal. tank slings on back—goes anywhere—fast. Brass pump hurls pressure stream or nozzle adjusts for spray.

Be Ready for Brooding Season Fires!

FREE CATALOG!

Costs Only **22.50**

Order Today! Tomorrow may be too late.

D. B. SMITH & CO. • 604 MAIN ST. UTICA 2, N.Y.

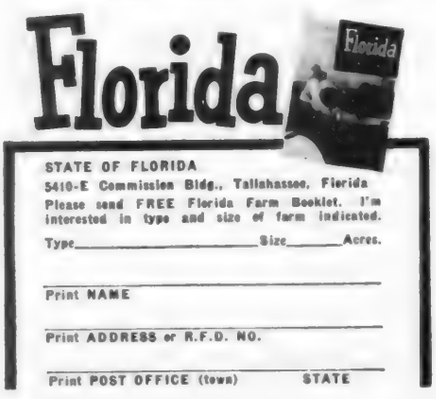
Farmer Sims makes a sale!
LISTEN! JOE AND GRACE HAVE INVITED US TO VISIT THEM IN FLORIDA!
NO REASON WHY WE CAN'T GO. THE BOYS CAN TAKE CARE OF THE FARM. NOT MUCH TO DO WITH A FOOT OF SNOW ON THE GROUND.
LATER IN FLORIDA
WHAT A DIFFERENCE! UP HOME THE GROUND IS FROZEN AND YOU'RE PLANTING YOUR SECOND CROP.
THAT'S ANOTHER GOOD THING ABOUT FLORIDA FARMING, BOB. WITH GOOD LUCK, WE CATCH NORTHERN MARKETS WHEN FRESH VEGETABLES ARE SCARCE AND PRICES GOOD... SAY, HOW ABOUT A LITTLE FISHING BEFORE DINNER?
J. SIMS
EN ROUTE HOME
GRACE SURE SOLD ME ON FLORIDA! SAYS THEY'RE MAKING SOME MONEY AND GETTING A LOT MORE OUT OF LIFE
JOE SOLD ME, TOO! LET'S SEE WHAT WE CAN DO ABOUT SELLING OUR PLACE. I KNOW FARMING AND I'M SURE WE'LL DO ALRIGHT IN FLORIDA.

Many truck farmers have found they *can do alright in Florida.*

Florida's formula for successful farming includes a mild climate that permits long growing seasons and multiple crop production; ample rainfall, plenty of sunshine, responsive soils, and growing markets. Experience and capital are necessary, of course.

Florida also needs dairymen, poultrymen, livestock raisers and nurserymen. Remember this big plus that goes with working and living in Florida — *you get more out of life in Florida's recreational climate.*

Plan a sightseeing vacation in Florida soon. Look around for your place in the sun. Meanwhile, mail coupon for booklet on Florida farming.



STATE OF FLORIDA
5410-E Commission Bldg., Tallahassee, Florida
Please send FREE Florida Farm Booklet. I'm interested in type and size of farm indicated.
Type_____ Size_____ Acres.
Print NAME
Print ADDRESS or R.F.D. NO.
Print POST OFFICE (town) STATE

150 lbs.—and he beat me three years in a row. If I'd had enough manure this wouldn't have happened, but I didn't, and I took to using a little fertilizer. Never could see laying out that much money until Wayford talked me into it. We tried a part of a field one year. That convinced me. Now we put on 200 pounds of ammonium nitrate, 33 per cent nitrogen, and plow it down. Then we put down 450 pounds of 8-20-20 to the acre when we plant. Best corn crop I ever had with manure was 60 bushels. We get close to 100 now, and this land isn't the best."

It was over the cultivation of corn that Jesse and his son finally locked horns. More fertilizer—he would go along with that, because he saw results: a tractor to replace the team—that, too, he agreed, if you could afford it, and he could handle a tractor easier than a team. But not plowing corn three times was more than he could swallow. His father and his grandfather, both fine corn men, wouldn't think of laying by the corn unless it had three cultivations. Sometimes when the weather caught up with them they had to go into the field with a one-horse plow, the corn was so high. You had to keep the weeds down and you had to stir up the ground and bring up the moisture. "No, sir. I'll plow my corn three times," he insisted.

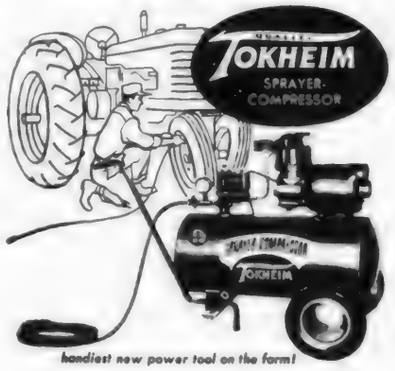
But Wayford was patient and stubborn, and he got his father to let him have five acres to try his hand on. He gave the field a dose of 2-4. D and plowed it once and his corn was just as good as his father's. Jesse gave ground after that, but to this day he is not quite convinced. "I slipped into the field this year," he says, "and went over it the second time. Wayford thinks it was a waste of time, but he'll see."

"Dad's bark is worse than his bite," says Wayford. "He always held out a while when I wanted to do something new, but he's a good farmer and it didn't take long to change his mind if the idea was sound. I learned more from him than I ever learned in school. When it comes right down to knowing what makes a good crop or a good hog, he's forgotten more than I'll ever learn."

Over the years Jesse has changed his thinking about livestock, too. "It took me a long time to learn about purebred livestock," he admits. "In the old days a cow was either a good cow or bologna meat. What you could get for her depended on what she did at the milk bucket. Nobody asked about her papers. Now you can't get a top price for a cow unless she has papers. Wayford and I started to grade up the herd just before the war when artificial insemination made good bulls handy."

The fields and barns on Jesse's farm slowly and imperceptibly took on the new look, but life within the farmhouse followed the old accustomed ways. The supper by lamplight, the family gathered around the base burner on winter evenings, the bucket of water brought from the

Air power— Liquid spray— from a single source!



handiest new power tool on the farm!

Here are the combined advantages of a high-capacity sprayer and air compressor, designed by Tokheim to lighten work on the farm. Delivers up to 100 lbs. pressure, 8-gallon spray capacity. Electrically pressurized, operates 30 minutes away from power source.

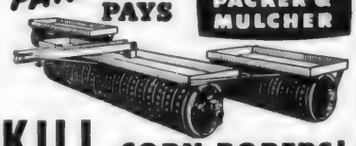
SPRAY POWER
- insecticides, weedkillers
- paints and whitewash
- deodorants, disinfectants
- water . . . a handy auxiliary fire-fighter

AIR POWER
- for inflating tires
- greasing rolling stock, machinery, equipment
- dusting and many other maintenance jobs

Write for FREE booklet
"How To Install an Underground Tank"
General Products Division
TOKHEIM CORPORATION
1626 Wabash Ave. **Fort Wayne 1, Ind.**
Factory Branch: 1309 Howard St., San Francisco 3, California
Canadian Distributor: H. Reeder, 205 Yonge Street, Toronto

GOOD FARMING PAYS

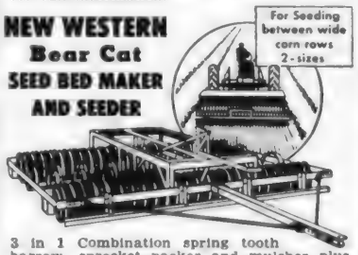
WESTERN Sprocket PACKER & MULCHER



KILL CORN BORERS!

It pulverizes, mulches and firms soil. IT DOES NOT UNCOVER CORN STALKS that have been plowed under, therefore corn borers in these stalks are smothered in the ground. Saves time, labor and horsepower preparing ideal seedbed. Leaves surface mulch without grooves, which greatly helps to prevent washing. This seedbed conserves moisture, saves seed because more of the seeds grow; and helps to increase yields of all crops. Great also for rolling in clover and grass seed and breaking crust on winter wheat in spring. Find out why it does the work so much better, easier and faster. Be sure you get the genuine WESTERN. Write for full information.

NEW WESTERN Bear Cat SEED BED MAKER AND SEEDER



3 in 1 Combination spring tooth harrow, sprocket packer and mulcher plus Seeder. Gives maximum seed bed preparation. Delivers concentrated weight and power where needed. Levels ground. Pulverizes, packs, and mulches, then heavy spring teeth shovels cut and further break stubborn clods, lumps. Rear self-cleaning sprocket-packer roller further pulverizes, packs, and mulches. Leaves ground in 1st class seed bed condition for any grass, clover, or grain seed. With Seeder—seed is pressed firmly into soil by both Packer and Mulcher Wheels. Leaves surface mulch without grooves. Great help in preventing washing, crusting, blowing. Holds moisture. Write for full details.

WESTERN LAND ROLLER CO., Dept. FQ-31
Hastings, Nebraska — Manufacturers

for '55 it's the NEW GEHL® Chop-All T.M. Reg. HARVESTER

Gehl steps out in front with the New "Chop-All" Forage Harvester—proving once again how Gehl Specialized Chopper Engineering pays off in bigger capacity and better performance—*at lowest cost to you!* This new Gehl "Chop-All" Harvester earned its name:

- "Walking through" tall sudan, sorghum and soybean mixtures, shown above, with its Mower Bar Attachment.
- Taking tall corn "in stride" with either 1 or 2-Row Gehl Corn Head.
- "Sweeping up" giant windrows of dry or wilted hay with Gehl Windrow Pickup.

That's how the Gehl "Chop-All" Harvester proved its fame . . . Be right! Buy Right! Buy Gehl—owned by more farmers *than any other independent make!*

Buy RIGHT! Buy GEHL! Get More *Exclusive* Features

- ★ Four attachments—each with "Quick-Switch" from Mower Bar —to Windrow Pickup—to 1 or 2-Row in only 5 minutes. PTO or Motor, optional.
- ☆ New "Chop-All" Features—greater capacity, cleaner cutting, better packing, best keeping silage. New Bisulfite Feeder.
- .. All-steel cutter bar, boiler-plate steel flywheel, adjustable axle, self-aligning bearings on feed rollers.
- ✓ Gehl—America's *Most Complete* Line of Forage Handling Machinery and Equipment.

Amazing low-cost GEHL PTO 2-Row Chopper. It's a good buy!

GEHL BROS. MFG. CO.
Dept. MC-592, West Bend, Wis.

Prove to me why the trend is to chopped hay ☐
Send me your booklets on Grassland Farming ☐
Show me how to save money making my own forage wagon and bunk feeders using Gehl parts ☐

Name.....
Town.....St. or Rt.....
State.....Acres Farmed.....

7 DAY HEAD START

When you have a short growing season, a week's "head start" makes lots of difference. That's why so many farmers are buying Towner's new A plow, which will get into the field earlier. It is designed to operate in moist, sticky soils that cause ordinary plows to plug.

Write for free literature

TOWNER MANUFACTURING CO.
Santa Ana, California
Since 1915

dooryard well on the kitchen table. Mrs. Metzger walked to the neighbors to borrow a cup of sugar—and sat for an hour, in housewife small talk. The family went to Sunday school and church and Blanche baked a cake for the church social.

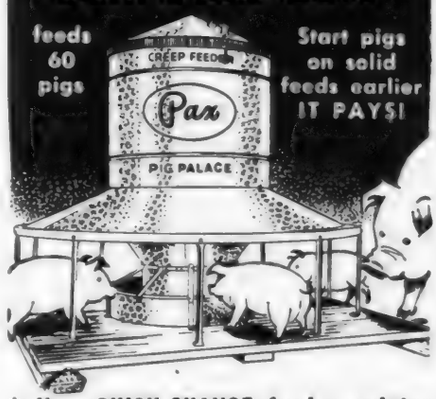
Then the telephone lines reached out to the farms and hamlets of America to change the way of life, to end the isolation. They leaped the bad roads and the distances: it was the telephone bell that tolled the end of an era.

Mrs. Metzger agrees that the telephone marked the end of the good old days. "We stopped going to see our neighbors," she says. "It was too easy to step to the telephone and talk to them. We quit visiting back and forth, and the oyster suppers petered out and we didn't go to church as much as we ought. People dropped off being neighborly, but we kept the old party line buzzing."

The telephone was the foot in the door, the forerunner of all the gadgets of the machine age. "They put in a power line from Felicity after Roosevelt came in." says Jesse, "and I wired the house. I got my first automobile then, and the county filled up the holes in the pike and put some tar on it. We breezed into Cincinnati to see a movie when we wanted to and my wife talked me into a radio. Then we got a milking machine and we put water in the house. There's hardly anything around the place now we had when we moved here."

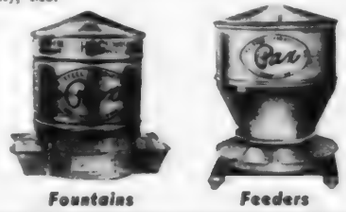
New Pax "Pig Palace"

NEWEST IN CREEP FEEDING



*** New QUICK-CHANGE feed regulator**

* Feed young pigs up to 50 lbs. in weight special expensive feeds without interference from older hogs. *Exclusive "Cone over Cone" agitators. *A simple adjustment inside and at the top of the hopper regulates feed flow. (Pat. applied for.) See your local dealer or write for descriptive bulletin F100. Pax Steel Products, Inc., Coldwater, Ohio. Distributed from Coldwater, Ohio; East Moline, Illinois; Sioux Falls, S. D.; Kansas City, Mo.



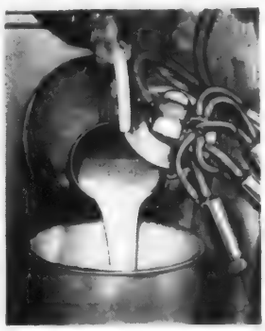
Fountains Feeders

new "plus" design

CO-OP. Universal NEW SUSPENDED MILKER

The new bucket is a beauty! Big smooth curves for easier cleaning... new heavier, sturdier construction!

New Single Point or Two Point Suspension



Easy Pouring with Modern Design Handle and Lid that Swings Aside!

ONLY CO-OP UNIVERSAL HAS ALL OF THESE "PLUS" FEATURES

- "Pistol-Grip" handle; "Swing-Aside" lid for easy pouring.
- Deep moisture well in lid traps bacteria laden vapor.
- Safe, low vacuum.
- Soothing, side-to-side alternating action.
- Famous Calf-Nose inflations with off-center opening . . . prevent milk lock.
- Choice of single-point or two-point suspension hangers.

See it at your local dealer. Write for detailed information.

Universal MILKING MACHINE DIVISION | NATIONAL COOPERATIVES, INC. 5041 First Avenue, Albert Lea, Minn. Branches at: Waukesha, Wis., Syracuse, N. Y.

BACKED BY 29 YEARS OF MILKER MANUFACTURING "KNOW-HOW"

Potions, Elixirs, and Liniment

When Jesse set up housekeeping and farming, he had a bottle of Sloan's Liniment on the ledge back of the horse stalls, a box of rat poison out of reach under the eaves of the smokehouse, and a few odds and ends of arnica, witch hazel and laxative pills on a shelf in the kitchen beside the clock. For many years he needed nothing more from the chemist or the druggist.

"Then, all of a sudden," he says, "the bugs came and our stock got diseases we never heard of before, and the milk inspector said we had to keep the flies out of our cow barn. A lot of fancy poisons for rats came out and we had to inoculate our legumes and we had to spray five or six times to get an apple crop. We had to spend money on things we never spent on before, and we couldn't keep up with the new ones."

Jesse believes that in the old days people were happier than they are now. At least he feels he was happier, although he observes that the young folks today seem to have a lot of fun. "Maybe it's because I'm getting old," he says, "but life is just too fast for me now. I can't take my time any more. Even the weather has changed—rains bunch up in the spring now and we can't get our planting done, and then no rains all summer and no crop. The minute we finish one thing there's something else to do and if there isn't we're off down the road making a foolish trip for a spool of thread or a pound of nails. We thought twice in the old days when we had to get the horse out of the pasture, hitch him up, and take the hour or two to drive to Felicity.

"We were a lot happier then, too, because we didn't see so many things we wanted and couldn't have. There are so many temptations in a store today you can't get out until your pocketbook is empty. We didn't have social security then and if we didn't fix ourselves up for old age we'd land in the poorhouse and we all knew the county poorhouse.

"If our only pleasure had been in making money we wouldn't have had much pleasure. We had to get our fun out of other things. Why, I got more pleasure out of having a couple of barrels of potatoes in the cellar and a half dozen hams hanging in the smokehouse than a lot of money in the bank. I'd raised those hogs and fattened them and butchered them, and I saw the potatoes push up out of the ground in the spring. Anybody who hasn't grown his own stuff doesn't know how it feels. I wouldn't want to work in a factory and draw a check on Saturday night and take it around to the grocery and buy canned goods. Food wouldn't taste the same. You've got to live with it and raise it yourself.

"We didn't need much money in those days. Not even to get started farming. If you were willing to work everybody helped you and pretty soon you had the mortgage paid off. Now, with farms getting bigger and bigger, the little man hasn't much of a chance. Big farms you can't work yourself are a bad thing for our country.

"I made out fine on a small farm; paid off the mortgage, educated two children, and saved money. Not much during the depression, but a little; and I really made money during the war. Now my son is with me, and two families have to make a living here. We started a dairy ten years ago, and we've done all right. We get more tonnage from 30 acres than we used to get from the whole farm, and we keep six times the number of cattle. But it's getting harder and harder every year—we spend just as much, and we are getting less and less for our milk and hogs.

"Farmers have always kicked about taxes and the high prices in stores. I kick, too, but when I think of the roads we have now and the help we get from the county agent, I guess I shouldn't kick. I don't know what we would do without radio and electric lights and the milking machine. Life is a lot easier than it was and that costs money."

The World Shrinks

When Jesse Metzger thought of Russia when he was a boy in knee pants trudging reluctantly to the one-room schoolhouse in Brown County, he thought of it as a pink expanse on the map of Europe. From his teacher he got a hazy conception of a

FARM WANT ADS

This new Farm Quarterly department is open for advertisements of quality products and services. Rates 50c a word including each word in name and address. Terms: Cash with order. Circulation: 211,000. Advertisements for the Summer issue accepted until April 10, 1955.

POLLED SHORT HORN

THE RECORD for 1954 at Landen Farms: 1. International Grand Champion Bull at Chicago. 2. Established world record price for female sold at auction. 3. Undefeated Pair of Yearlings at Five State Fairs and the Chicago International. 4. 1953 Reserve Champion Bull and 1954 Grand Champion Bull in service in the herds. 5. Nationwide sales to satisfied breeders of Polled Shorthorns. Visit Landen Farms, Warren County, Foster, Ohio. We would like to show you the record. Or write me personally, Jos. D. Landen.

HEREFORD

HAIGLER GROWTH Tested Herefords Ohio Station Experiment — Calves age six months. Eight calves by Haigler sire averaged 34 pounds more than forty calves by other Hereford sires. Charles E. Haigler & Son, Route 4, Washington Court House, Ohio.

SHEEP

WOODBINE FARMS. Registered Corriedale Sheep for sale. World famous bloodlines. Write us your needs. Breeding stock always available. H. H. Walker & Sons, Gambier, Ohio.

COLUMBIA SHEEP registered ewes and rams. Top Bloodlines with production records. Developed by U.S.D.A. for high production of lamb and wool. Also Registered Great Pyrenees dogs. Fairview Farm. Harold Tangeman, New Bremen, Ohio.

DAIRY

THORNBECK FARM Golden Guernseys. Type—Quantity—Quality. Consistent breeding based on McDonald—Coldspring bloodlines. Ordinary farm conditions. They will do as well for you! E. M. Bieber, Douglassville, R.F.D. 2 Penn.*

SANTA GERTRUDIS

SANTA GERTRUDIS: The first American breed of beef cattle and the first new breed of beef cattle in over a century. Bred and built for economy and results. Literature sent at your request. Breeding stock warranted. Limited number of feeders so please inquire first. Visitors welcome. Patch Farms, Philomont, Virginia.

GOATS

WANT A GOAT? Buy a good one. Registered Saanen, French Alpine kids. $85 up. Write for sales list. Dot Rogers, Caprice Farm.Burtonsville, Maryland.

DAIRY GOATS, HIR production-tested breeding stock. Nubian, Saanen, French Alpine. Our Nubian herd won Grand Champion Ohio State Governor's trophy. Saanen and French Alpine include many prize winners at Ohio and Kentucky Fairs. Fensternol Farm, R.R. 1, Amelia, O.

SWINE

REGISTERED LANDRACE BOARS—best of all Hybred cross with your sows. A fine boar to half your herd. Top the market with the best. Prices right. L. D. Gleason, Greensburg, Indiana.

YORKSHIRE BOARS, gilts. Tested for Litter size, rate of growth, ratio of Feed Conversion, Carcass quality. From sire of 1953 International Grand Champion barrows over all breeds. Tuberculosis and Brucellosis tested. Hickory Hill Farm. R. 2, Washington C. H., Ohio.

DOGS

SCOTCH COLLIES, beautiful, intelligent, courage to handle all livestock. Excellent watchdogs. Wonderful pets. Championship blood. Pups, trained male. Hickory Hill Farm. R. 2, Washington C. H., Ohio.

POND STOCKING

BLUEGILL fingerlings for private pond stocking. The finest northern stock, also Bass and Bait Minnows. Write for prices and information. Millstream Fish Hatchery. R.R. No. 1, Pierceton, Indiana.

CALVES AND FEEDERS

MOBRIDGE LIVESTOCK Commission Company, Inc. Fresh producer-consigned livestock handled at our regular livestock sales every Thursday. Special calf and feeder sales in the Fall. Mobridge, South Dakota, P. O. Box 357, Nestor S. Mehrer, Manager.

USED FARM EQUIPMENT

SEAMAN ROTARY TILLER. Seven foot pull type powered by G.M. diesel engine. Two speed transmission. Recently overhauled; excellent condition. Write Julian Hays, Woodburn, Ky.

FARM REAL ESTATE

RETIRING OWNER must sell productive, ideal and beautiful dairy farm for 70 cows and offspring. All improvements are new and ultra-modern. Milk sold Dallas, Texas Market. Terms. J. M. Musser. R. 6, Fayetteville, Ark.

FARMS, RANCHES in Northern Sacramento Valley. Fertile soil, abundance of irrigation water and wonderful climate. Roy Williams, Realtor, Box 1118, Chico, Calif.

FARM CRAFTS & PRODUCE

ALL WOOL PLAID and solid color shirts, $7.50-$10.00. Tailored to fit you. Write Mrs. Paul W. Binkley, Pleasant View, Tenn., for details and samples of materials.

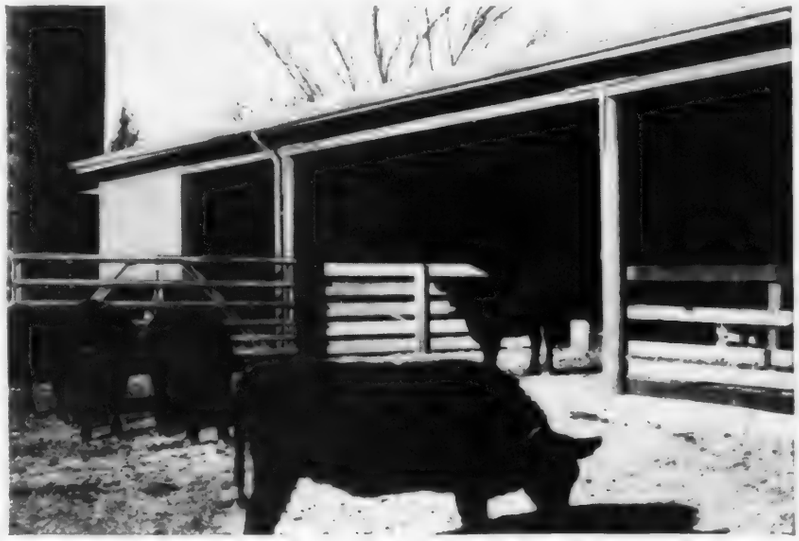
HAND CARVED ceramic horses done in an oil medium. Men's copper spring tie clasps, $3.00; Womens lapel safety pins, $3.00; Collectors miniature horses, $1.75; Horse ash tray, $5.00. Mrs. Darleen B. Rose. Dolly-Mark Artcraft. 416 Horn Ave., Santa Rosa, California.

A REAL SOUTHERN GIFT: made and packed on our Farm: Two one pound jars of Pecan La Cuite (Taffy). **One—one pound jar of plain LaCuite (Taffy). One—10-ounce can of pure Ribbon Cane Syrup.** ($3.50 Delivered Parcel Post.) **L. J. Soileau, R.F.D. No. 1, Box 454, New Iberia, Louisiana.**

OIL PAINTINGS, signed originals approximately 8x7 beautifully framed in Gold, Mahogany, White. Flowers, $4.50 pair. Landscapes, Spring, Summer, Autumn, Winter, approximately 9x8, $6.50 pair. Postpaid. Larger sizes available. Satisfaction or refund. Charlotte Perkins Studio, 17 Crestmont Road, West Orange, New Jersey.

DOW

Pole Barns and farm buildings go up at one-half to one-third usual cost



clean *PENTA-treated* poles keep sturdy buildings up for years longer —resist rot and termites

Corn cribs and other structures are built cheaply, last longer on PENTA-*treated poles.*

The pole-type structure is the biggest news in farm building today. Reason: these versatile, rugged buildings can often be built for *less than half* the cost of other construction. Poles treated with clean PENTA* wood preservative cut construction costs of single or multiple-purpose permanent structures of *many* types.

Building time and costs are cut so sharply because the pole plan eliminates much fancy sawing, fitting and mortising—also simplifies foundations. And *PENTAchlorophenol poles protect against damage from decay and termites; structures stay sound and serviceable years longer with minimum upkeep.

Your local lumber dealer is your best source of supply for quality-controlled PENTA-treated posts and poles. We suggest you see him soon. And meantime, let us provide you with helpful information about how and where PENTA-treated poles, posts and other wood can save you expense. THE DOW CHEMICAL COMPANY, Midland, Michigan.

THE DOW CHEMICAL COMPANY
Dept. PE860P, Midland, Michigan

Please send me, without cost or obligation:

- ☐ Information on pole-type buildings.
- ☐ Tell me where to buy clean PENTA-treated poles.
- ☐ Tell me where to buy clean PENTA-pressure-treated fence posts.

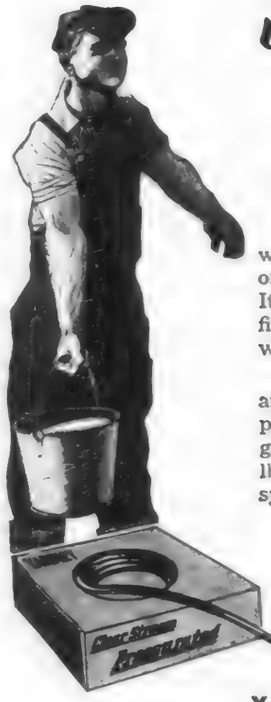
Name_____

Rural Route No._____

Town_____ State_____

you can depend on DOW CHEMICALS

DOW



Why carry water?

Extend your farm water system easily with Yardley *ClearStream plastic pipe*

Think of the places on your property where water on tap will save back-breaking work, hours of time, and increase profits, too. Why delay? It's so easy today to run cold water lines to barns, fields, stock pens, gardens, water troughs, anywhere. And the cost is less than you think.

All you need is Yardley ClearStream pipe and a few standard fittings. But, remember, all plastic pipe is not the same. Only Yardley — the guaranteed-quality pipe — is PressuRated to 75 lbs. and designed specifically for farm water systems.

Flexible coils up to 400 ft. follow any contour, lay up fast with simple tools. Accept no substitutes. The Yardley ClearStream name, size and PressuRating are permanently stamped right on the pipe.

PURE POLYETHYLENE

ClearStream contains only the best virgin material; has all other plastic pipe advantages — ⅛ the weight of steel — costs less to install — won't rot, rust or corrode. Ask your dealer.

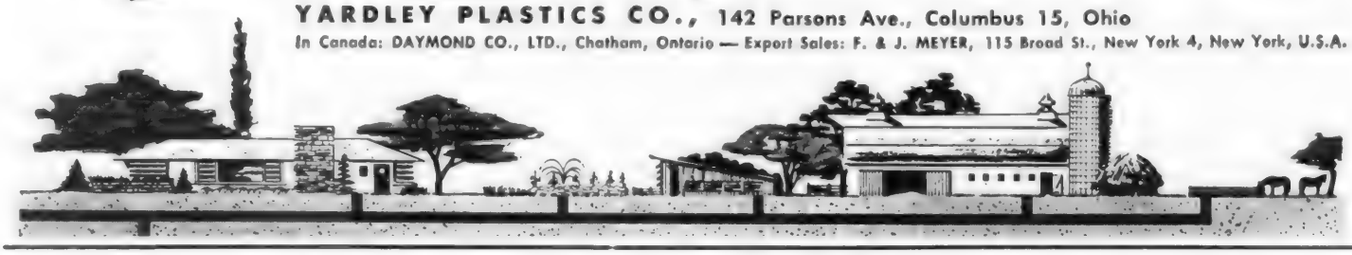
BOXED PIPE — The four most-used sizes are available in 100-ft. coils individually packaged.

THE BIG ADVANCE in plastic pipe is PressuRating. This Yardley improvement assures the *same safety factor in every size.* Install for the future.

SEND FOR FOLDER which also describes Yardley Pump Pipes — Twin-du-it for jets — Sub-du-it for submersibles.

YARDLEY PLASTICS CO., 142 Parsons Ave., Columbus 15, Ohio

In Canada: DAYMOND CO., LTD., Chatham, Ontario — Export Sales: F. & J. MEYER, 115 Broad St., New York 4, New York, U.S.A.



HALL BROS. *Chicks*

NOW IS THE *RIGHT TIME* FOR YOU TO ORDER

any one of these THREE PRODUCTION-TOPPERS

Yes! Right Now! Chicks purchased NOW will come into production when the demand for eggs exceeds supply owing to lower placements of production stock. Wise flock owners take advantage of rising price trends and prepare to meet growing market demands with these result-tested HALL BROTHERS CHICKS.

HALL BROTHERS SILVER HALLCROSS
Proven results in eggs! Proven results in meat production! The all-round dual-purpose bird! In 1954 Western New York Egg Laying Test, Silver Hallcross averaged 264 eggs per bird.

HALL BROTHERS SEX-LINKED PULLETS
First developed by us commercially in 1932 and still first in egg production. In 1953-54 Farmingdale, L. I. test averaged 265.2 eggs per bird for 287.9 points, 1st pen in contest for egg size.

HALL BROTHERS WHITE LEGHORNS
Healthy, sturdy birds for QUICK results in egg production. Start laying medium sized eggs and at 8 months go into full production with 75-80% large eggs of excellent shell texture.

FOR RESULTS LIKE THESE ORDER HALL BROTHERS CHICKS NOW

Write for FREE Illustrated Catalog

HALL BROTHERS HATCHERY, INC.
Box 18 Wallingford, Conn.

Russian as a man with a bushy beard who wore his shirt outside his pants. The Russians also threw babies to the wolves when they were pursued over the Steppes.

Now Russia seems almost as near to him as his next-door neighbor, who might be a mean man and poison his livestock or drop a sputtering stick of dynamite on his front porch. When he listens to his radio, or reads his newspaper, he is not allowed to forget that Europe is closer to him today than Cincinnati was when he was young. At odd moments he finds himself concerned about the future. "Russia holds a black wand over us," he says.

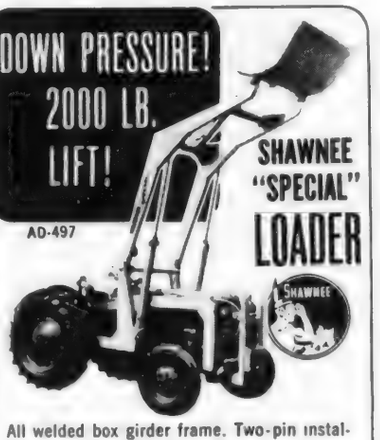
When Jesse reached voting age he conscientiously went to the polls and put an X under the Eagle, because he was a Republican and his father and grandfather before him had been Republicans. He was mainly interested in the county commissioners—the only time he ever scratched his ballot during those years was when a Republican commissioner refused to do something about the road in front of his farm. The national government was the President and a mass of men he never knew, called Congress. Once in a while there was a William Jennings Bryan or Theodore Roosevelt who became real people, but the issues of the national government were as foreign as Russia.

Today Jesse Metzger doesn't care who his county commissioners are, but he knows that Henry Wallace ordered him to plow

DOWN PRESSURE! 2000 LB. LIFT!

SHAWNEE "SPECIAL" LOADER

AD-497



All welded box girder frame. Two-pin installation for removal in less than ten minutes. With bucket roll-back feature. Down pressure so great, this loader can even lift front wheels off the ground. Lifts 2,000 lbs. to 9 ft.

Also available, Shawnee LOADMASTER, heavy industrial loader for Fordson Major Diesel. Write for Information.

Save Money—Save Work

SHAWNEE REAR BLADES

A complete line of rear blades for three point tractors—$105.00 up.

SHAWNEE MANUFACTURING CO., INC.
1947-AO Topeka Topeka, Kansas

down his pigs, and he says Eisenhower has the best foreign policy, and he almost got into a fist fight over McCarthy.

"The government has taken away all our freedom," he says. "They have a picture of my farm and they know what I got in every field, and there's a milk inspector out here every whipstitch telling me what to do. They let us alone in the old days and we got along fine."

Jesse and Blanche are concerned, too, about what is happening to the younger generation. "When I was courtin' Blanche," Jesse says, "I took her to church or to an ice cream social or to a little old hop at some friend's home. Once in a while I might let the horse slow down to a walk and do a little sparkin'. Now look at the young folks. Two or three nights a week they're out on the roads, driving sixty miles an hour, down to some tavern, where they drink beer and as likely as not cook up devilment. We're always afraid when the phone rings—afraid there's been an accident.

"Maybe I'm getting old and slowing down, but with all our machines and motors and automobiles, we never seem to have enough time to just sit and rest and think, like we did when I was a boy. The things that we enjoyed then were being neighborly and helping each other. We had to find our pleasures in ourselves and our friends. Now we depend on television and the movies. Not much heart in our pleasures today.

"Life is easier, though, for we don't have to use as much muscle as we did, but I would rather take it a little slower, and live longer. I've lived a full span of life—I'll be 77 my next birthday—and I don't see that we're any better off today. As I said before, I think Blanche and me were happier when we were young because there weren't so many things to want. It's wanting what you don't need that makes people unhappy."

BOOK FARMER

(*Continued from page* 47)

down in his records, but he can quote it from memory on a moment's notice. There is also a copy posted in the feed mill where his bulk feeds are mixed. The mixture includes:

65 lbs. shelled corn
15 lbs. mixed protein
10 lbs. wheat middlings
5 lbs. oats
15 lbs. alfalfa meal (if no pasture) replace with corn if you have good legume pasture.
½ lb. salt
1½ lb. simple mineral

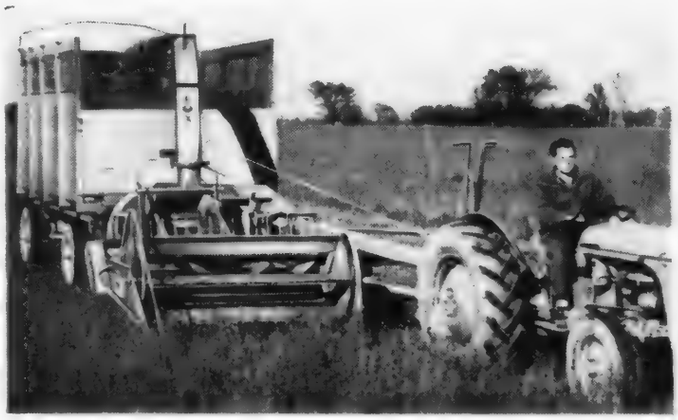
"This is a wonderful milk producer," says Pullin. "One year I weighed a 300 pig herd that averaged 60¼ pounds at 70 days of age. Those pigs were also creepfed a commercial pellet but they got a lot of milk from their mothers."

After his pigs are weaned they're self-fed shelled corn and a protein supplement in separate compartments right up to market time. "They also get the best alfalfa-ladino pasture I can raise," says Pullin. "Pasture is a good cheap feed and I get the sanitation from clean pasture free. It's a bargain combination I can't afford to pass up."

As he moves his market hogs out to pasture he sorts them into herds of about 90 each according to size. "This way," he says, "they get an equal chance at the feed and you get faster gains."

If Pullin's paper work is important in raising his hogs, it's doubly important in marketing them. Through the years he has developed some rather firm ideas about the hog market.

"I'm convinced," he says, "that a farmer doesn't always have to hit the top markets to be successful. If he tries that he may delay his selling too long. But he should use every method he can to avoid the low markets." As his hogs approach market weight in August and February, Pullin often spends part of his time checking over his records of past markets trying to determine the best time to move his hogs. He's wary of the dull market. "You stand a better chance at good prices on a rising aggressive market," he says. In August, he's willing to hold off a



Now . . . a new FOX . . . with 20% Greater Forage Harvesting Capacity

FOX—with 24 years' experience building forage harvesters— now brings you its most efficient model. With it—because of its 6-foot mower bar (full 72 inches) you can mow, chop and load as much grass silage in 5 hours as you previously did in 6, without increasing tractor speed.

This new FOX has many other improvements to make forage harvesting faster, easier, more economical. **NEW AUGER FEEDER** that pulls forage on to feed apron and centers it into feeding rolls without bunching; **NEW EASY LIFTING MECHANISM** adjusts quickly to convenience of operator—finger-tip control; **NEW SINGLE DRIVE MECHANISM** for all harvesting units. Speeds up attaching and detaching; **NEW ONE-PIECE FEED APRON** speeds flow of forage into feed rolls.

Note and compare these FOX FEATURES; SAFE CYLINDER-TYPE CUTTING MECHANISM mounted in a one-piece frame —gives a positive, clean cut; cannot get out of line and stones cannot wreck. The safest cutting mechanism built. **QUICK-CHANGE FEATURES** that enable one man, in 10 minutes without tools, to change to Pick-Up, Mower Bar or Row-Crop Harvester. **KNIFE SHARPENER** that quickly sharpens knives on the machine. These are but a few of the features that have made **FOX** the standard of comparison.

SO—SEE YOUR FOX DEALER FIRST—Make Fox your basis of comparison before you look at any other forage harvester.

FOX RIVER TRACTOR CO.
The Pioneer of Modern Forage Harvesting
535 N. Rankin St.
APPLETON **FOX** WISCONSIN

FREE—"NEW WAYS TO MAKE MORE PROFIT FROM FORAGE"—An information packed, how-to-do-it booklet to help you slash labor costs and save more of the meat-making, milk-producing nutrients nature puts into grass, corn and sorghum crops. Send for your copy today.

FOX RIVER TRACTOR CO., 535 N. Rankin, Appleton, Wisconsin.
I want to make more profits from my forage crops. Send me your new book on Forage Harvesting ☐ Also, send detailed information on the new Fox Forage Harvester ☐

Name_____
Address_____
Town_____ State_____
My dealer's name is_____

multiple strength fertilizers make more profit

in the grade you need!

Agricultural authorities generally agree that one way to increase farm profits is to *use quality fertilizer and more of it.* The trend is toward heavier applications of higher analysis fertilizer to send production up and costs down.

Thousands of farmers choose *International Fertilizers* regularly because these powerful plant foods have demonstrated their ability to push crop yield and quality to higher, more profitable levels. For nearly half a century, *International* has produced top quality fertilizer, made from the finest materials, properly seasoned and smooth flowing for easy distribution.

Your *International Fertilizer Dealer* is well qualified to advise you in the selection of regular or multiple strength grades and the amounts you need. So call him now to arrange for on-time deliveries for your *Satisfaction at Harvest Time.*

International MINERAL & CHEMICAL

DEALERSHIPS

A few desirable dealerships are available in excellent territories. Please write today—mentioning FARM QUARTERLY, for detailed information.

plant food division
INTERNATIONAL MINERALS & CHEMICAL CORPORATION
General Offices: 20 North Wacker Drive, Chicago 6

few days if the market looks healthy because hogs seldom flood the market until September. He tries his best to hit the "average peaks" and stay in the top one-third of the market the year around.

"You need steel nerves marketing in August," says Pullin. In 1953, he sweat out a sharp drop for two weeks and sold when the price went back up, but the prices continued to rise even after he had sold. He admits that marketing is one phase of the hog business where you do a certain amount of guessing.

He has no objection to marketing heavy hogs if the price for the added pork leaves a profit after the penalty for heavy animals. He tries to sell light in August with his hogs around 210 pounds and move them to market before the market is glutted. In February he'll let them go up to 240 pounds, which, although it's a "long way from a top hog," according to Pullin, "it's a good hog on a steady or rising market."

Since 1947 Pullin has kept a graph showing the daily hog prices at the Chicago market. He can tell at a glance, once these graphs are spread out across the living room floor, what the seasonal variations in the market have been in past years. He has also marked in on the appropriate dates such nationally important events as major steel strikes or our entry into foreign conflicts. He knows from this, for instance, that pork prices climbed five cents in two weeks after the outbreak of the Korean war.

Pullin is still building up his livestock enterprise. He's aiming at 1200 to 1500 market hogs a year and perhaps hiring another man, then leveling off. He still travels around checking out good hog raising ideas with other farmers. On one of these recent trips he saw a central farrowing house that set him to planning a similar one. "I would save more of my fall pigs," he says.

He has as much land as he wants, but isn't producing as much on it as he plans. He isn't sure how he'll get corn yields up to 125 bushels per acre . . . "perhaps irrigation," he says.

His parents, who live 80 rods up the road, expected that he would build a chicken house soon after he built his new home, but Pullin still has no chicken house. "They sometimes tell me," Pullin says, "that I'm just hitting the high spots in farming. But I tell them I'm not aiming at the low spots."

THE AUTHOR: Back in the Spring of '47 an ag journalism student at Ohio State University submitted a manuscript entitled, "The Immaculate Pig" to *The FARM Quarterly*. The by-line on the article was George Laycock. Immediately upon graduation Laycock joined the staff of the magazine, held the chair of associate editor for a number of years, went on to become one of the country's most prolific free lance writers in the field of farming and the outdoors. The Laycock by-line can be seen today in a wide variety of magazines of national circulation.

CHEMICAL WARFARE

(*Continued from page* 67)

sonably heavy soils. For this reason the pre-emergence spray is not recommended for light sandy soils where leaching to the

SMITH SPRAYERS

'A Labor Saver' for every Farm

RITESIZE SPRAYER

Light weight. 2 gal. capacity. 16" curved brass extension. 5 ft. hose. Brass adjustable nozzle for short or long spray. Ideal means of spraying gardens, flowers, poultry houses, weed and brush killing solutions, etc. Ruggedly built.

E-Z 5 GAL. KNAPSACK SPRAYER

Best knapsack sprayer made. Slow easy pumping develops high pressure for spraying trees from ground as well as garden, weed and brush killing.

Insist On A Smith Sprayer — FREE CATALOG! — "SMITH Sprayers are Choice for Quality the World Over" — Since 1888

D. B. SMITH & CO. • 404 MAIN ST. UTICA 2, N.Y.

KADET- 4-WHEEL TRACTOR

LOW IN COST-HIGH IN QUALITY

COMPACT IN SIZE - A POWERHOUSE IN PERFORMANCE

ONLY $275.00

Ride while you work with the new and versatile KADET.

Write today to Dept. U for complete information

- Husky 3 H.P. Clinton Engine
- Convenient Recoil Starter
- 2 Forward — 2 Reverse Speeds
- Heavy Duty Traction Tires
- Compact — Easy to Handle
- Automotive — Type Steering

This rugged, versatile tractor is ideal for farms, estates, schools, nurseries, institutions, parks, etc. Tackles every tough chore on the farm. 12 quick-hitch attachments available, including Snow Plow, Sickle Mower, Gang Mowers, Trailer, Turning Plow, etc.

NATIONAL FARM EQUIPMENT CO., INC.
142 GREENE STREET • NEW YORK 12, N. Y.

For More Bountiful Harvests

PLANT

Bountiful Ridge

FRUIT TREES • BERRY PLANTS

Complete line of Fruit, Nut, and Shade Trees, Dwarf Fruit Trees, Strawberry, Raspberry and Blueberry plants, Asparagus, Grapes, Evergreens, and ornamentals. Most of the old favorites plus many new exclusive (patented) varieties. Over 80 years growing experience thru three generations of Kemp family assures highest quality nursery stock at reasonable prices. Satisfaction guaranteed.

FREE 60 PAGE CATALOG—WRITE

Bountiful Ridge Nurseries
BOX Q-35, PRINCESS ANNE, MD.

RID YOUR FIELDS OF TROUBLESOME STONES

PIXTONE

THE *New* MECHANICAL STONEPICKER

Picks up, carries, dumps stones 1½" to 8" in diameter -clears up to 4 acres a day. Saves labor, eliminates many implement breakages, increases efficiency and productivity. Also clears stones from pasture land. Write for literature, giving name of your dealer to arrange demonstration.

BRIDGEPORT IMPLEMENT WORKS, Inc.
Dept. D — Stratford, Conn.

MAYRATH CORN AND HAY ELEVATORS

Automatic chain tightener
Self-leveling engine mount
Sealed ball bearings
Nothing to grease

20¼" wide

Telescoping 4-section spout 4 to 14 ft.

Satisfaction guaranteed or money back

24 FT.. $235*
32 FT.. $290*
40 FT.. $340*

*Prices with carriage F.O.B. Monmouth or Dodge City

Curved pan feeder trough!

10 ft... $95

PREVENTS PILE-UPS
Counterbalanced—raises with only 10 lbs. lift

Built by...
MAYRATH
Makers of world's largest selling auger loaders

Dodge City, Kans.
Monmouth, Ill.
Minot, N.D.

NEW LIFE FOR "SICK" PLANTS

cures chlorosis
stimulates growth *regreens leaves* *restores bloom*
speeds crop *improves quality* *increases yield*

CHEMISTRY OF CHELATION

Versen-OL Iron Chelate unlocks the door to a new Agricultural Chemistry. It controls the trace metals which regulate the enzymes that affect the growth-factor of plant life. Agriculture Experiment Station and private research show that it works in acid, alkaline and calcareous soils.

AMAZING RESULTS

Results already obtained with Versene Chelates over the last 3 years have been so remarkable that we have decided to offer it to "professional" growers for experiment. Try it now on citrus, flowers, sugar cane, sorghum, alfalfa, corn, potatoes, tomatoes, peanuts, gardenias, azalea, roses, blueberries, hibiscus, sunflowers, avocados, soybeans, lawns, grass, golf greens, ornamentals and many other crops.

ORDER TODAY

The soluble Versen-OL Iron Chelate *Concentrate* is available only in 1 lb. tins, enough to treat up to 3000 sq. ft. of soil (when dissolved in water). Send check or M.O. for $2.98. Postpaid. Complete instructions. P.O. Box 311.

VERSENES INCORPORATED
FRAMINGHAM MASS.

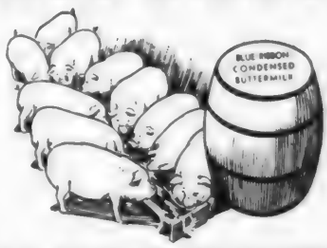
seed level would be likely.

The more usual method of using this weed killer is after the last cultivation. At this time the amine salt is used with drop nozzels which will put the mixture at the base of the plants at the rate of a half pound to the acre on the weeds between the stalks, or a pound and a half for weeds between the rows. Spraying at this time kills off the weeds that would leave their seed for another year.

DNOSBP (which stands for dinitro-o-secondary butyle phenol, which explains why initials are so often used with these chemicals) and CIPC can both be used as a pre-emergence spray with cotton. Either of them is applied at the rate of a pound and a half to three pounds, depending on the heaviness of the soil, directly behind the packer wheel at planting time. These chemicals will control most of the annual grasses and many of the broad leaf weeds, but may do some damage to the cotton seedlings particularly if the application is followed by heavy rains or if temperature exceeds 85 degrees for three straight days after the plants come up.

Wild onion and wild garlic, along with a number of other weeds, can be controlled in Ladino or white clover and grass pastures by spraying in late spring or summer with a half to a pound of either the ester or amine salts of 2,4-D. For complete eradication of the onion and garlic, however, the treatment will have to be re-

Make Your Feed Dollars Go Farther with
BLUE RIBBON



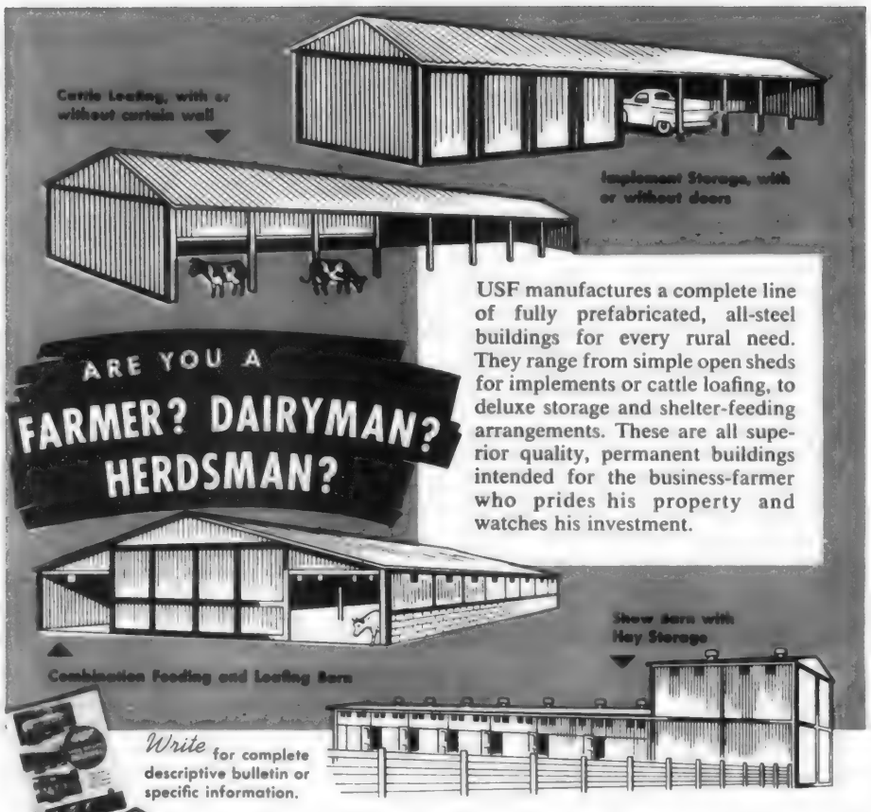
BLUE RIBBON CONDENSED BUTTERMILK **boosts your pork profits. It practically doubles the protein value of your grains, cuts grain requirements in half. Available in barrels—3 sizes.**

BLUE RIBBON EMULSION **gives chicks and poults the milk vitamins, the extra minerals and proteins needed for resistance to disease, and for fast, thrifty growth. Buy it in self-feeding 50-lb. box.**

BLUE RIBBON CONDENSED WHEY **Rich in milk vitamins and other nutrients, BLUE RIBBON CONDENSED WHEY helps poultry and turkeys get extra value out of mash and grain. It sharpens the appetite, conditions the digestive system for fast growth and extra production. Your dealer has it in self-feeding 50-lb. boxes.**

Get Blue Ribbon Products at Leading Dealers

THE MERCHANTS CREAMERY CO.
536 Livingston Street, Cincinnati 14, Ohio
Plants throughout the Central West States


Cattle Loafing, with or without curtain wall
Implement Storage, with or without doors
ARE YOU A
FARMER? DAIRYMAN?
HERDSMAN?
USF manufactures a complete line of fully prefabricated, all-steel buildings for every rural need. They range from simple open sheds for implements or cattle loafing, to deluxe storage and shelter-feeding arrangements. These are all superior quality, permanent buildings intended for the business-farmer who prides his property and watches his investment.
Combination Feeding and Loafing Barn
Show Barn with Hay Storage
Write for complete descriptive bulletin or specific information.

USF UNITED STEEL FABRICATORS, INC.
WOOSTER, OHIO

CONTROL SPITTLEBUGS with

Niagara

BHC and METHOXYCHLOR Dusts and Sprays

Get 'em while they're young!

Spittlebugs start feeding early. They can cause surprisingly large losses in the yield of your alfalfa, clover and other feed crops—up to 50%.

Now is the time to protect against these pests. Just dust or spray with superior Niagara materials at the first sign of infestation. Apply befort plant growth is more than six inches high and before many of the young bugs become enveloped in froth.

Niagara CHEMICAL DIVISION
FOOD MACHINERY AND CHEMICAL CORPORATION

Middleport N. Y., Richmond Calif., Jacksonville, Fla., Tampa, Fla., Pompano, Fla., Wyoming, Ill., New Orleans, La., Ayer, Mass., Harlingen, Tex., Pecos, Tex., Yakima, Wash. Subsidiary: Pine Bluff Chemical Co., Pine Bluff, Ark. Canadian Associate: NIAGARA BRAND SPRAY CO., LTD., Burlington, Ontario.

WHEN YOU BUY Niagara YOU BUY PROTECTION
FMC Trade Mark

peated for at least three years. This treatment will injure some of the clovers and reduce the carrying capacity temporarily. Only a third of the pasture should be treated at a time.

Good as they are, selective sprays are not yet perfect and there are occasional failures in their use. One central Illinois farmer tried using a pre-emergence spray on soybeans last year and was forced to conclude, "The results were not very satisfactory. We had a well prepared seedbed, applied the stuff right after planting, and had a light rain to carry it into the soil, but it didn't touch the pigweeds and grasses. The only other thing we could think of that might have helped would have been to compact the ground over the rows before the application like they do with cotton. But we were afraid that the beans might break their necks trying to get out of the ground."

Somewhat related to the weed killers are the growth regulators—plant hormones contained in chemical compounds which are capable of producing seedless fruit without pollination, aid in fruit set, thin excess blossoms, prevent premature shedding of fruit, hasten ripening, or stagger ripening of the fruit. One of these, MH-30, is being used to control suckering of tobacco after the plant has been topped to create more uniform and better quality leaves. Without this new chemical, the suckers which grow at the base of the plant must be pinched off by hand, a hot dirty job.

Another growth regulator which is bound to meet with instant success with boys when it reaches the market is one that will slow down the rate of growth of lawn grass so that it needs very few cuttings. More important to agriculture are the defoliants which eliminate the leaves after they have done their job, making harvest easier. Cotton, for example, is defoliated with Aero Cyanamid about 25 days after the last bolls are set. Defoliation causes the plants to open their bolls more uniformly so that more cotton can be picked by the mechanical picker, with less trash.

Methods of applying chemicals have developed as rapidly and as spectacularly as the development of the chemicals themselves. We have grown from the old methods of dusting with a cotton mesh bag and spraying with a one-man-powered pump in a barrel mounted on a buckboard to aerial application (spray and dust planes flew more hours last year than all commercial planes) and mechanized farm applicators which can spray and dust the crops whether tall or short. But this is a story in itself and will be covered soon in another issue of THE FARM QUARTERLY.

THE AUTHOR: Roger Gish has for a number of years been associated with the Do-Well Agricultural Service of Champaign, Illinois. On January 1, this year, he and Jesse M. Dowell became owner-partners of this central Illinois farm management company. Gish earned his bachelor's degree in agriculture at the University of Kentucky after two and a half years service in World War II, later received a degree of Master of Science in Agronomy from Iowa State College. Before joining the Do-Well organization he worked with the Soil Conservation Service and as Director of Conservation and as Agronomist of the Illinois Agricultural Association.

CORN BREAD

(*Continued from page* 43)

and one-half teaspoon salt. Add a cup of buttermilk and blend in one beaten egg, spoon out and drop in deep, hot fat. It is important that the grease be very hot to keep the Puppies from becoming grease logged."

According to Phineas there is no limit to the good things one can make from corn meal. There are Corn Sticks and Hush Puppies, Corn Pones and Dodgers. Then there are Griddle Cakes or Meal Cakes. Griddle Cakes are made from a batter that is the same as that for corn bread, but thinner, and fried on a smoking hot skillet until they are brown and lacy on the edges.

Corn Pones are made much like Griddle Cakes, but without soda and they are baked instead of fried. These flat cakes are made by mixing together a cup and a half of corn meal, one-half teaspoon of salt and enough sour milk, about one and one-fourth cups, to make a thin batter. Drop the batter off a large spoon onto a slightly greased skilled or heavy baking pan, cover, and bake in a moderate oven until brown.

The Dodger can be baked, steamed in a pot like a dumpling, or fried in a greased skillet. To make them, mix a dough of a cup of salted meal, two tablespoons of melted drippings, and a small amount of cold water. Roll the dough in your hands into sticks about three or four inches long and the thickness of a broom handle, and drop into the top of a pot filled with boiling turnip greens. Let them steam for twenty minutes and serve with the potlikker.

Phineas can grow lyrical when he describes the eating qualities of corn bread. He drools as he tells you, "Take a slab of Yaller Bread, split it down the middle, and sop it in the skillet after you've fried a slice of country ham. You've got something there, Suh, that's too good for a king. Corn bread, any kind of corn bread, makes everything better. Chicken gravy, ham gravy, beans, maple syrup, sorghum, black strap, dunk it in your coffee, eat

HASCO EAR TAGS

FOR LIVESTOCK

Economical. Easily applied.
Cattle Size—$13.00 for 500
Sheep-Hog Size—$9.95 for 500
Applicator for applying $2 ea.
Identical name stamping on 1,000 or more tags—no charge . . . less than 1,000 tags—$1.80 net.

NECK CHAIN TAGS

1" numbers, both sides. Complete cow set: brass tag 2½ x 2½", 40" chain, and attachment link. Per set—dozen lots—$1.50 each. F.O.B. Newport.

AUCTION SALE TAGS

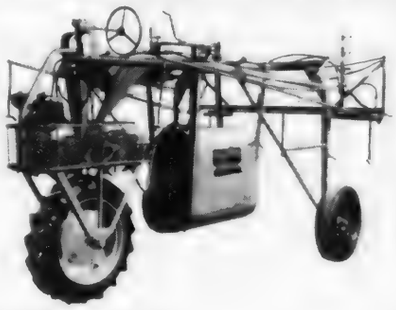
Style No. 136. 1¼" diameter. 1" black number, both sides, on white background, $7.95 per 500 quantity.
Hog rings for attaching—$1.75 per 500.
Ringer—50c each.
Also complete line of Bull Rings, Ear Notchers, Cattle Leads. Prompt delivery.
Write for free circular and additional information.

NATIONAL BAND & TAG CO Dept 8-900 NEWPORT, KY

BETTER SPRAYING CHEAPER --

With

THE HAHN HI-BOY



Self-Propelled, High-Clearance Sprayer

KILLS INSECTS AND CONTROLS WEEDS

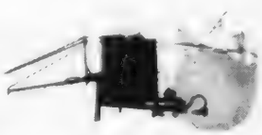
- Bullseye accuracy saves spray, placing it right where needed and nowhere else.
- Hi-Boy's speed, easy maneuverability, and simplicity save spraying time.
- Reports from the field say that the Hi-Boy can be operated for less than 2 cents an acre.
- Available with 8¼ or 11 H.P. engine—uses Hahn's non-clogging, internal-gear pump or hi-pressure piston pump.

THE HAHN GUN SPRAYER

- For hand spraying jobs such as fence rows, brush, cattle, and flushing chicken and hog houses. Also for watering tobacco plant beds.
- Uses Hahn pump, regulator, gauge, strainer, hand gun, and hose.

The RM 61

Hahn's rear-mount tractor sprayer. Equipped with Hahn pump. Sprays widths up to 30 ft. Easily attached to tractor.



HAHN, INC. 1833 WEST FRANKLIN EVANSVILLE, INDIANA

Write for literature and name of nearest dealer.

Please send information on:
☐ HAHN HI-BOY ☐ HAHN TRACTOR-MOUNT SPRAYER
☐ HAHN GUN SPRAYER ☐ HAHN TRAILER TANK SPRAYER
☐ HAHN PUMP ☐ HAHN JET SPRAYER

Name_____

Address_____

DEMING IRRIGATION PUMPS

Specify a Deming Pump for your irrigation system. Every unit is designed to deliver maximum volume at required pressure. Modern construction features of Deming Pumps make full use of available power. Operating and maintenance costs are held to a minimum. The wide variety of Deming Irrigation Pumps include pumps powered by gasoline engines, electric motors, belt-driven units, and pumps for direct connection to the customer's available power unit. Deming Irrigation Pump Bulletin No. 800C is available at no cost to you.

DEMING WATER SYSTEMS

More types! Bigger range of selection for all needs! Consult your Deming Dealer or write for free literature.

Deming Convertible Jet Water Systems for shallow and deep wells. Full range of capacities.

75th ANNIVERSARY DEMING PUMPS 1880 - 1955

THE DEMING COMPANY
510 Broadway • Salem, Ohio

☐ Send free literature on Deming Irrigation Pumps.
☐ Send free literature on Deming Water Systems.

NAME .....

ADDRESS .....

EASY, LOW-COST

INSECT, WEED CONTROL

Only with spraying equipment can you do all these important jobs and many others. Only with modern Century sprayers can you do them so quickly, easily, and at low cost.

Destroy insects in crops	With Century sprayers you're always prepared for any insect emergency. Ready to protect your crops at a moment's notice.
Better weed control in row crops	Spray even when soil is too wet to cultivate. Spraying is faster, more effective than cultivating. Two Centuries do 25 acres per hour. Extra time is money.
Weed control in small grains, pastures	Spraying boosts crop yields, improves pastures.
Spray livestock, apply fertilizer	Use your Century sprayer to free your *livestock* of insect pests that cut gains and milk production. Spray trees, shrubs, buildings. Apply liquid fertilizers.

Century 16-Portion Boom Sprayer sprays more without refilling. Simple, quick mounting, fits most tractors. Complete tractor seat control. 14, 21, 28 ft. booms. Nozzle-to-row spacing. Also available in aluminum for nitrogen spraying. Tractor or trailer mounted. Prices start at $143.50.*

Other Century Sprayers	Combination Field and Handgun . . . covers swath to 50 ft. wide or to one side only. As low as $102.00.* Tractor-powered Handgun unit available.

*All prices F. O. B. factory

Write today for dealer's name, circular and price list.

CENTURY ENGINEERING CORP.
SEEDERS, SPREADERS, SPRAYERS
Cedar Rapids, Iowa

ONLY CRAINE LETS YOU...

Choose the SILO that fits your Farm

- Tile Stave
- Tile Block
- Concrete Stave
- Triple Wall
- Wood Stave

Get the facts...

. . . on this complete line of Craine Silos—see why one of the Craine "Famous Five" is best for your farm, your feeding problems. Write for free illustrated booklets and prices—learn how easily you can own a Craine Silo—pride of any farm!

CRAINE, INC., 355 CEDAR STREET, NORWICH, N. Y.

CRAINE SILOS

it straight, or with butter and jelly, no matter how you fix it, corn bread is the top eatin' treat of the universe."

As a sort of bonus which goes with his lecture on corn bread, Phineas usually adds a bit of philosophy. "Generally," he says, "the simplest things in life give the greatest pleasure. Corn bread is one of them. It's cheap, easy to make, and it's mighty filling. Most of our pioneering and Indian fighting was done on corn bread, and if the South hadn't run out of corn we wouldn't have lost the War. You can't go wrong if you stick to corn bread, because it will stick to you."

THE AUTHOR: Eleanor Cullen became a contributor to *The FARM Quarterly* about a year ago with an article on making sauerkraut. A native of Maysville, Kentucky, she can boast a first hand acquaintance with Southern cookery. Mrs. Cullen formerly was a feature writer on the Maysville *Daily Independent*.

THE DAIRYMAN'S DILEMMA

(*Continued from page* 40)

those rare dairymen who has eliminated mastitis from his herd. It can be kept that way only by eternal vigilance. Take your eye off your cow a split second, and she turns up with a lack-luster eye and a clot in her milk.

The first steps in vigilance are checks for the first appearance of the disease. Part of these checks are mechanical, part are eye and hand inspection. The most common of the mechanical tests is the strip cup or a variation, the strip plate. The strip cup has a fine strainer. Pure milk will go through the strainer, but highly infected milk that has become garget will cling to the meshes in the form of clots, curds, flakes or yellow or bloody strings. As a general rule, infection has progressed to an advanced stage when it shows up in a strip cup. Long before this happens, the dairymen should have noted other and less dramatic symptoms indicating the first onslaught of the infection. However, the strip cup is not to be ignored and careful dairymen use it at least twice a week. The strip plate has a similar principle. Milk is allowed to flow over a black plate and abnormalities show up much as they do on the strainer. Off color milk, curds, and odors show up better on a plate than on a strip cup.

There are a number of tests on the market using a dye or a chemical as a base for detecting infection. All have their restricted virtues, but none of them determine the type of infection. They include the bromthymol test, bromcresol purple test, the Hotis test, and the leukocyte test.

One of the best known of the leukocyte tests is the so-called Whiteside test. This test operates on the theory that when infection is present in the udder the protective white cells, the leucocytes in the animal's blood, increase in order to fight the infection. A small amount of milk from an individual quarter is drawn into a test tube and a few drops of the testing solution added to it. The number of white

GOLDEN RULE
BABY CHICKS

32 years of quality chicks and "Golden Rule" Service. Heavily improved year to year with High Production R.O.P. Breeding. 18 popular straight breeds and crosses for Heavy Egg Production and Tender Juicy Broilers. —Pullorum Typhoid Clean. Early order discounts. Write today for beautiful 24 page instructive catalog. It's Free!

GOLDEN RULE HATCHERY
DEPT. 19 BUCYRUS, OHIO

GRAZING FIELDS
has the best

African White Guineas
Montadale Sheep
Polled Shorthorns
R. I. Red Poultry
Rubycomb White Poultry
Welsh Ponies at Stud
Bay End Buzzards Bay
Massachusetts

Crib Plans FREE!

Send for FREE crib blueprints with list of all materials. Also Elevator catalog showing 10 styles.

MEYER FARM ELEVATORS
CUP AND PORTABLE

Simplest, strongest made—no short turns. Heavy-duty Portable 18" x 22' wide. Priced Right. Also Big 20" wide model at AMAZING LOW PRICE. Elevates everything—baled hay, corn, small grain. State if interested in BUCKET or PORTABLE.

MEYER MFG. CO.
BOX 752 MORTON, ILLINOIS
Makers of Famous Meyer Elevators

make **MILK** from **FORAGE**

Big-capacity registered Holsteins convert home-grown hay, silage, and pasture into milk.

That means less outgo for feed concentrates, more *income* from heavy milk production.

There's a Future with REGISTERED HOLSTEINS

HOLSTEIN-FRIESIAN ASS'N. OF AMERICA ★ Brattleboro, Vt.

EAR TAGS for LIVESTOCK

Tamper Proof Style

CATTLE size. Bright plated steel. Easy to apply and cannot be removed without breaking. With consecutive numbers and owner's name—not more than 11 letters.
100 tags—$3.75 **200 tags—$6.25**
Locking Pliers for cattle tags—$2.00 each

SHEEP size. Light, strong aluminum. With consecutive numbers and owner's name—not more than 10 letters.
100 tags—$3.00 **200 tags—$4.50**
Locking Pliers for sheep tags—$1.50 each

Specify numbers and name wanted on tags.
Write for catalog of other styles of Ear Tags, Ear Markers, Tattoos and Poultry Bands.

KETCHUM MFG. CO., INC.
Dept. 16 Lake Luzerne, N. Y.

blood cells is indicated by degrees of viscosity when a smear is made on a glass plate. The sample is compared to a chart and an approximation made of the number of white blood cells present. The degree of density indicates the degree of infection. At best, this test is only about 80 per cent accurate because white blood cells may increase for reasons other than infection, such as they do right after freshening, at certain times during pregnancy, and at the drying up period. The Whiteside test is valuable in picking up information before it would be noticeable in the strip cup. It costs only a fraction of a cent per test, and anybody can do it.

The eye of the husbandman fatteneth the cattle, they say; the eye is also one of the best tests for mastitis. Following are important symptoms of mastitis which can be checked by eye and hand:

1. The cow has a gross fear of being milked, may refuse to come into the barn, will not allow the calf to suck, and may kick at the calf, or walk away from it.

2. The calf may either refuse to suck or jump from teat to teat and does not fill up. The calf may also develop diarrhea.

3. In extreme cases the milk may have a foul smell.

4. Parts or all of the udder may be hot to the touch and swollen, or it may be ice cold. It may be very sore and touching it may disturb the cow.

5. Because of frostbite or extreme cold there may be a condition like chilblains and the udder may crack and bleed. A teat may slough off and there may be discoloration of the teat or quarter. In extreme cases the hair may fall off the quarter or the entire udder.

6. The cow may refuse to eat altogether or go off in her feed, followed immediately by falling off in her milk. She may have a high body fever and may not give down when the milking machine is put on.

7. The teats and udder may be injured by wire cuts, abrasions, bruises, or scratches. There may be pimples, or red spots.

8. The healthy udder is soft and pliable. Examine all quarters for lumpiness or unusual firmness.

Man the Guns

At the first symptom of mastitis not a moment is to be lost, for if the cow is run

ADD-A-UNIT
REMOVABLE UNLOADER
Most Efficient, Economical, Versatile
Cuts production costs. Increases return on equipment investment.
Pat 2,470,386
PTO Operated 20 Bu. Per Min.
Each Component a Necessity on Every Farm
HOTCHKISS STEEL PRODUCTS CO.
Dept 23-R • Bradford, Illinois

FREE
STARLINE
BARN PLANNER

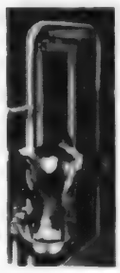
Easiest, Quickest, Best Way To Plan Your Barn

Are you about to build a new barn or remodel the old one? The Starline Barn Planner costs you nothing and prevents expensive mistakes. It includes 51 cut-outs which you place and arrange on an accurate planning board. It's easy to find your most efficient barn arrangement.

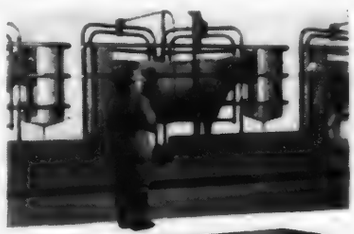
STARLINE EQUIPMENT SAVES TIME . . . LABOR . . . *Find out about*

BARN CLEANERS — ENDLESS CHAIN AND PORTABLE TYPES

MILKING PARLOR STALLS — SIDE OPENING AND WALK-THRU TYPES



STALLS — UNIT ARCH, CHAIN TIE AND COMFORT TYPES



MILK HOUSE EQUIPMENT

WATER BOWLS
VENTILATORS, WINDOW FRAMES, CANNON BALL DOOR TRACKS

SINCE 1883
STARLINE
Harvard, Illinois Albany, New York

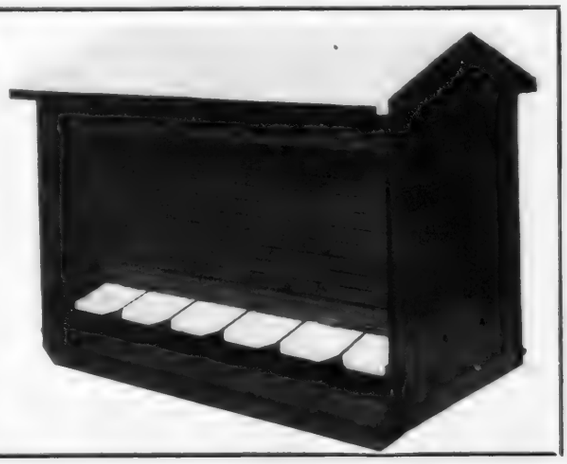
MAIL COUPON TODAY

STARLINE, INC., Dept. 848, Harvard, Illinois
Please send FREE BARN PLANNER on
☐ Stall Barns ☐ Loose Housing Barns (check only one)
Send data on _____ (State type of equipment)
☐ Check for special student mailing.
NAME _____
TOWN _____
COUNTY _____ HGW NO _____
STATE _____ R F D _____

SMIDLEY — FRENCH
Automatic Hog Feeders
"The leader for thirty years"

Smidley is the only completely automatic hog feeder built. The only feeder which automatically shuts off the flow of feed when there is feed in the trough.
Smidley feeders are recognized as the only truly "waste-proof" feeder by over forty of the leading swine experimental stations in the United States who use them. Smidley-French quality gives them a twenty-five year life expectancy. Write for free folder and prices today.

WEBBER C. FRENCH MFR.
WASHINGTON, C. H., OHIO



CARDINAL PRODUCTS

PACEMAKERS FOR EFFICIENCY & DEPENDABILITY AT LOW COST . . .

CARDINAL "Skipper 20"

BIG 20" TROUGH

A top-performance, top-quality elevator priced low. Offers operating features available in any higher priced elevator.

COMPARE . . .

its 20" trough, plus features, low price.

Sturdy steel construction throughout. Trough 20" wide; overall depth 12"; channel depth 5½". Trough lengths, 24', 28', 32', 36', 40' and 44'. eight foot or 10' drag feeder or self-powered feeder optional equipment.

CARDINAL "Hyker 18"

A FUNCTIONAL, DURABLE, LOW-COST, PRACTICAL ALL-PURPOSE FARM ELEVATOR

Performance to your needs without costly and fancy gadgetry. Puts corn to the crib, baled hay to mow or stack, small grain to the bin with dependable efficiency.

Trough—16-gauge steel, sectionally constructed. Lengths—16', 20', 24', 28', 32', 36'. Reduction drive provides means for powering by any or all of 4 ways—speed jack, PTO, elec. motor or gas. engine.

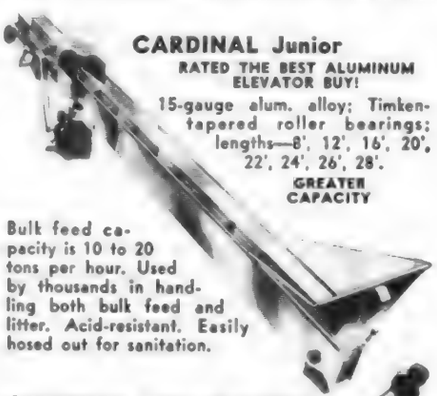
CARDINAL Junior

RATED THE BEST ALUMINUM ELEVATOR BUY!

15-gauge alum. alloy; Timken-tapered roller bearings; lengths—8', 12', 16', 20', 22', 24', 26', 28'.

GREATER CAPACITY

Bulk feed capacity is 10 to 20 tons per hour. Used by thousands in handling both bulk feed and litter. Acid-resistant. Easily hosed out for sanitation.



CARDINAL "Aug-O-Matic"

MOVES THE MOST MATERIAL FOR THE MONEY INVESTED—UP TO 10 BU. PER MINUTE

Tube—4", galvanized. Lengths— 8', 12', 16'. Power—gas. eng. or elec. motor. Hopper optional.

YOUR BEST BUY

● Removable head section ● Self-aligning bearing ● Heavy universal motor mount ● Sturdy swivel bracket for mounting support ● Reliable skid shoe on intake end.

SEE YOUR CARDINAL DEALER OR WRITE FOR LITERATURE

MANUFACTURED BY

[illegible] & MFG. CORP.

[illegible] St., COLUMBIA CITY, IND.

down and the infection is virulent, each hour can be important in treatment. While the best thing to do is to call the veterinarian, there are just not enough veterinarians to go around, they charge fees, and the experienced dairyman can do a stop-gap job of fighting the fire until the firemen arrive. Helping him out in this are the drug companies, many of which have reliable preparations on the market to back up proper systemic treatment. These are in the form of an ointment which is infused into the teat canal. It usually comes in a tube with a scientifically designed tip which is inserted in the teat. Each tube usually contains one dose. These preparations may contain one or several of the antibiotics or other germ killers and are designed to kill the most common of the mastitis germs. The reputable drug manufacturers put out good preparations. Their claims for their products are based on long experience, exhaustive tests and their own reputations for reliability. Some of these ointments are advertised as being milk soluble, water soluble or oil suspension. Various bases are used as carriers. Some are prepared to cope only with streptococcus agalacteae, most common of the mastitis infections. Others claim a wider range and are known as broad spectrum medications. Most of them depend upon the sulfae or antibiotics for their effectiveness. You can't go wrong on these medications if they are put out by a reputable company. The one you use depends upon the results you get and the recommendation of your veterinarian.

The application of this type of medication should arrest all ordinary cases of mastitis in the first stages. If you have overlooked the disease until it has a good foothold and has spread to every part of the quarter or to more than one quarter, it may have gained too much headway to be immediately arrested by this type of medication. It is best then to call a veterinarian who will administer further treatment, sometimes in the form of intravenous or intra-muscular injections, or orally. The first aid udder treatment and the treatment which might be administered by the veterinarian are designed to aid the natural body defenses in throwing out the invading germs. If the source of the infection is a bruise or a laceration these, too, must be treated. If there is fever present in the udder, ice packs will help. Hot applications will help circulation in congested parts. Any laceration should be cleansed, disinfected and dressed. If you are administering the medication you should be sure to follow directions. There is a point here in mentioning that one should be sure that the cow has mastitis before treating her. This is easier said than done. The knowledge comes only after long experience and conferences with your veterinarian.

The dairyman can reasonably expect success from these first aid, emergency medications if he has caught the infection

There's a BEST TIME to service your tractor

Prevent major repair with TIMELY care!

Manufacturers specify when maintenance is needed for trouble-free performance. Your tractor lasts longer and stays out of the repair shop with proper maintenance.

New and improved through continuing engineering research

HOBBS Engine Hour METER

Tells WHEN to change oil, lubricate, overhaul, etc. Leading manufacturers recommend the meter as a way to better performance.

NOT A REVOLUTION COUNTER

. . . but an electric timing instrument that shows HOURS and MINUTES of tractor operation — accuracy that's important for protective maintenance. Ruggedly built and easy to install. LOW PRICE — see your dealer or WRITE FOR FULL DETAILS.

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY

John W. Hobbs Corporation

2066 YALE BLVD. SPRINGFIELD, ILLINOIS

BOSTROM IMPROVED FARM LEVEL

Accurate, Durable and Complete for Terracing, Ditching, Irrigating, Tile Draining, Grading, Running Lines, Turning Angles and etc.

The Bostrom is used and endorsed by Schools, Extension Service & Individual Landowners everywhere

Anyone can operate a BOSTROM Level by following the simple direction booklet included with each Instrument. We manufacture 3 models; Farm Level, Contractors Level, Convertible Level. All BOSTROM Levels are sold on the guarantee of satisfaction or money back. WRITE TODAY for literature, prices and name of our distributor near you.

Bostrom-Brady Manufacturing Co.

534 Stonewall St., S.W. ATLANTA, GA

BLIGHT RESISTANT CHESTNUTS

The Blight resistant Chinese Chestnut is really "ringing the bell" as an ornamental and orchard crop. Crop Trees for Cattle Forage and Market. Our nut and crop trees selected for quality and early bearing are the future's landscape tree and a simple solution with profit for America's naked hills. Don't miss them. Write for amazing list.

NUT TREE NURSERIES

DOWNINGTOWN, PA. BOX Y

CORRIEDALES

1. For unexcelled fleeces.
2. For more pounds of quality lamb per ewe.
3. For easy lambing with a minimum of assistance.
4. For good mothers with a heavy milk supply.
5. For rapid gains in lambs.
6. For rams that are vigorous, virile and highly prepotent.
7. FOR EXTRA PROFITS FOR YOU.

For literature and list of breeders in your area write:

AMERICAN CORRIEDALE ASSOCIATION, INC.

ROLLO E. SINGLETON, *Secretary*

108 Parkhill Columbia, Missouri

in its first stage. But any first aid should be regarded as the first step only in treatment, just as one tries to control a fire until the firemen come. If the infection is in its primary stage, and if it's caused by the more common type of germ which the drugs at hand are made to control, then the job is simplified. But there is no quick way of knowing when one of the rare types is responsible, or how far the infection has progressed. The wise thing to do is to call your vet. If he suspects complications he will send a sample of the milk to a laboratory for analysis to determine the kind of germs causing the infection. A bacteriological examination of the milk about three weeks after treatment will determine if infection has completely disappeared.

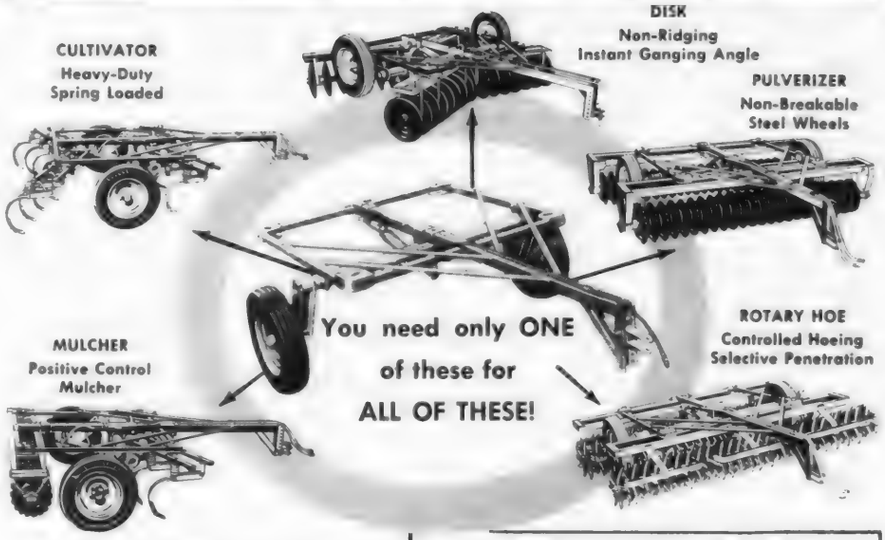
Management of a cow which has mastitis is a matter of custom and opinion. Many dairymen segregate the cow at once, taking her out of the milking line. However, this is sometimes questionable. She knows her place in line, she knows her stanchion. Getting her into a new place often brings on a hassle, she gets excited, and she'll get her sisters excited. Then when she has recovered the operation must be repeated, with a repetition of confusion. She should by all means be milked last, and the milk dumped down the drain and not fed to hogs, calves, or humans. Care should be taken that she does not contaminate others, but her peace of mind and calmness is important when she is off color in health.

There are some other do's and don'ts which might help in control of mastitis. Keep the production records of each cow behind the cow in the barn so that you can check each milking. A sudden fall-off indicates trouble. Do not deviate from a set milking time. If you have too many cows and have too much work to do a careful job, it is better to get rid of some of them than to risk mastitis because of lack of time to make the necessary checks. Do not allow inexperienced persons to use milking machines on heifers. First calf heifers must be trained early and carefully. The udder should be thoroughly dried after washing. A damp teat causes the suction cup to chafe it.

There should be someone around every dairy who can hand milk, for very often hand milking will stave off an attack of mastitis when the teat is injured or when the milking machine might be too vigorous for the delicate condition of the udder. Know the breeding and freshening date of your cow, for at those times the incidence of mastitis increases. A periodic bacteriological test of all cows in the herd should be made, say two or three times each year.

Do not allow calves to suck each other or bum around in the milking herd. Examine teat cups daily, and check for leaks in the air line. Do not blow out your milk

CUT IMPLEMENT COSTS!
Push Yields To A New High!



Save up to 50% in implement costs! Go Hydra-Flex! Pay for one chassis—only one! Start with this basic Cobey frame. Mount any Cobey gang on this frame. Do it in seconds. No lifting! Hydraulic power drops frame on gang—raises gang for transport—sets depth control—all from your tractor seat. Use it all year. Slip a box on the chassis—a livestock crate—your spray rig. Haul fence posts, bagged feed, milk cans. But right now, mail coupon below for full facts on the Hydra-Flex Tillage System!

It's as easy as this!

Raise Frame Position Gangs | Lower Frame Tighten Nuts | Raise Frame for Transport

In this way you quickly change to other gangs — and right in the field, too!

HYDRA-FLEX
TILLAGE SYSTEM UNIT

For Quick Action Send This Coupon Now

THE Cobey CORPORATION — GALION, OHIO Att: Mr. Rick

PLEASE PRINT →

Please send me, without obligation, full information on your Hydra-Flex.

Name .....

Address .....

Town ..... State .....

Bigger Yields with Scotts® Seeds

DEPENDABLE QUALITY FARM SEEDS FOR OVER 80 YEARS

New, Proven Varieties are always found at Scotts. Vernal, Naragansett, Williamsburg alfalfa; Penscott clover; Lancaster brome; Clintafe and Clintland oats; Harosoy soybeans; Piper sudan and many others

Top Producing Hybrid Corn— the vigorous, healthy, fast drying, clean picking kind that fights unfavorable conditions and fills your cribs with sound corn. Select from 20 early, medium and late maturing varieties.

Free 2 Year Subscription to Crop News and Views is yours when you send a postcard for Scotts seed list. These helpful bulletins keep you informed on the latest recommended seeds and seeding practices.

Send a postcard for latest complete Seed Price List

Scott FARM SEED CO., Locust St., Mechanicsburg, Ohio

How DOANE serves FARM OWNERS

- **MANAGES FARMS** for absentee owners. **Selects** capable farm managers. **Tests** soils for lime and fertilizer requirements. **Develops** profitable farm operating programs. **Supervises** crop and livestock operations, including and lease repairs, purchase of supplies, marketing of crops and livestock, soil-conservation and improvement measures. **Relieves** owners of time-consuming details and worry. **FARM PROBLEMS** is Doane's business.
- **DEVELOPS DETAILED FARM OPERATING PROGRAMS** for those who look after their own farms.
- **APPRAISES FARMS** for long-term earning value and for current sales value. Helps purchasers of farms avoid mistakes.
- **CONSULTATION AND SPECIAL REPORTS** on any farm problem: functional building layouts, land or farmstead appraisals, engineering, building or estate taxation, farming laboratory, livestock, share operations.
- **THE COST** Doane Management Services are for farms, to farm owners of any farm that cost in additional farm income plus freedom from worry.

FREE — Farm or Ranch Management Check Sheet

If you would like a check sheet with which to analyze your farm for your own information, we will be glad to send you one. No obligation.

DOANE AGRICULTURAL SERVICE, INC.

Box (M-21), 5142 Delmar Blvd.
ST. LOUIS 8, MO.

lines by using air from the barn—you are filling them with millions of bacteria.

Mastitis and Human Beings

There is a very good reason why the law requires that the milk from cows with mastitis be taken off the market. Infectious mastitis germs of certain types present in the milk cause streptococcal or staphylococcal infections in humans. Likewise, these infections in the human may be transmitted to the cow through breathing them into the air or through touching the cow. Sore throat from drinking infected raw milk is not uncommon. A rather rare form of mastitis is caused by a germ associated with the more serious form of human pneumonia. Fortunately, this germ can be controlled with antibiotics.

DWARF
FRUIT TREES
SUPPLEMENT YOUR INCOME:
Grow the tastiest of luscious, full-sized fruit on dwarf or semi-dwarf fruit trees. Early bearing (2-3 years). Require only one third the care of ordinary fruit trees. Over 170 varieties available. Order now direct from grower. Discounts for quantity purchases.
FREE CATALOG
58 Pages Illustrated
Write Today
Dept. F
HENRY LEUTHARDT
Port Chester · New York

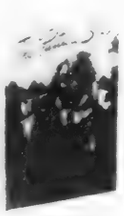
FARM BOOKS

(*Continued from page* 24)

written a fine word-picture of his other friends, the planters; the farmers; the postmaster of Rat, Missouri; Kate, the most intelligent and aristocratic mule in Missouri; Wade Tucker, the sheriff turned social reformer; Owen Whitfield, the leader of the great share cropper's roadside sit-down strike; and, of course, Thad Snow himself, the farmer, economist, and social thinker who writes with equal relish about the year he worked barefoot in snow, rain, and mud to cure bunions and the time when his friends feared that he would be the guest of honor at a lynching bee.

***Feeding Poultry**, by Gustave F. Heuser (2nd edition), John Wiley & Sons, New York, $7.50.*

Since the first edition of this informative book in 1946, a revolution has taken place in the feeding of poultry. The discovery of vitamin B_{12} and the growth stimulating effects of antibiotics along with other developments made it necessary for Dr. Heuser, who is Professor of Poultry Husbandry at Cornell University, to issue a revised edition. In this new edition he covers the feeding of laying, breeding, and broiler chickens as well as the feed problems of turkeys and waterfowl.



The Farm Book Store

The Editors of the Farm Quarterly, after a careful selection of current agricultural books, recommend the following to our readers.

The Pasture Book—by W. R. Thompson $3.50
Revised edition, the 8th since 1948, of this information-packed book.

From Missouri—by Thad Snow $4.00
Fascinating reminiscences of a corn belt and cotton belt farmer.

Feeding Poultry—by Gustave F. Heuser $7.50
A new edition of an excellent book on feeding and feed composition.

Grasses and Grassland Farming—by H. W. Staten $5.00
How to make the most of grass farming and extend the pasture season.

Irrigated Soils—by Thorne and Peterson $6.50
The practice of irrigation and the management of irrigated soils.

Handbook of Agricultural Chemicals—by L. W. Hanna $3.25
The chemicals, direction for use, and precautions in using.

Colorstrip Plant Testkit $4.00
Tells whether your crops are getting enough nitrogen, potassium and phosphorus. Complete instructions come with the kit.

Soils and Fertilizers—by Firman E. Bear $6.00
An understandable book on the complex subject of fertility.

Successful Poultry Management—by M. A. Jull $5.00
The second edition of this practical book on poultry.

A Practical Guide for the Beginning Farmer—by Herbert Jacobs $3.00
A book to give you an intelligent start in farming.

Dairy Science (2nd ed.)—by W. E. Petersen $6.00
A new edition of one of the best and most complete books on dairying.

The Livestock Book—by W. R. Thompson et al $3.50
This is the sequel to the best selling *Pasture Book*. It's a good one.

Feeds and Feeding (21st ed.)—by F. B. Morrison $7.00
The authoritative book on livestock and poultry feeding.

A Veterinary Handbook for Cattlemen—by J. W. Bailey $5.00
For that emergency when you can't reach the veterinarian

Beef Cattle—by Roscoe R. Snapp $6.50
A carefully revised edition of this excellent book on beef production.

THE FARM BOOK STORE
c/o "The Farm Quarterly" X
22 E. 12th Street
Cincinnati 10, Ohio

I enclose (check, money order or cash) for the following books. Please send them to me immediately.

_____ (Title of book) _____ (Price)

_____ (Title of book) _____ (Price)

and enter my subscription to "Farm Quarterly"

☐ 1 Year $2.00 ☐ 2 Years $3.50 ☐ 3 Years $5.00

Name _____

R.R. or Street _____

City _____ State _____

Your order will be sent to you postpaid. *(Buyers living in Ohio should add 3% to price for sales tax. All prices subject to change.)*

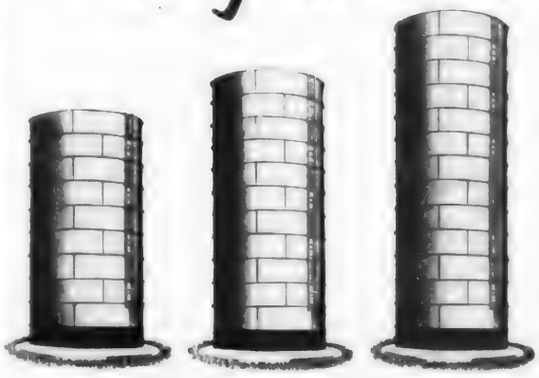
GRASS SILAGE DEMANDS

C&L CLAYTON & LAMBERT

SILVER SHIELD

THE LONG-LIFE SILO

that grows with your needs

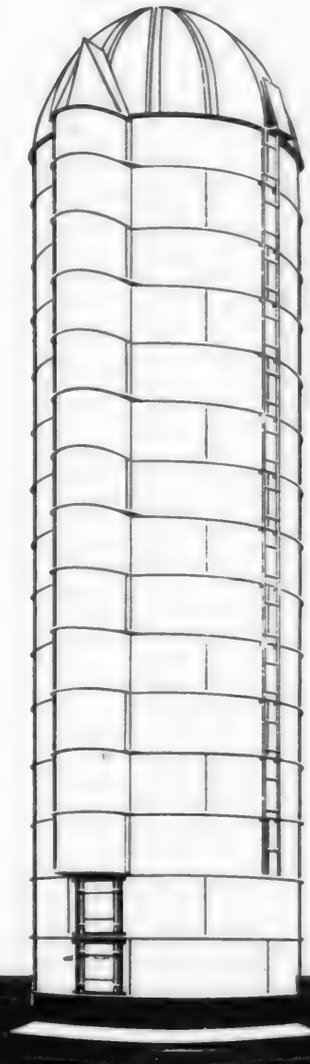


First Year
13 Cow Capacity

Second Year
15 Cow Capacity

Third Year
17 Cow Capacity

Grass silage is a profit-maker... BUT... it produces more pressure than corn silage — greater corrosion and etching — and requires far greater wall-strength.



SILVER SHIELD

● ECONOMICAL

● CONVENIENT

● SAFE

MAIL TODAY!

● CLAYTON & LAMBERT MFG. CO.
Middletown, Ohio

Please send me catalog giving complete information about C & L Silver Shield Silos

NAME_____

ADDRESS_____ STATE_____

CITY_____

C&L SILVER SHIELD SILO

CLAYTON & LAMBERT MFG. CO.

New Developments Answer Crop Drying and Storage Problems

With national averages for grain losses 20% in the field and 10% in storage, it's easy to see why crop conditioning pays. Field losses from shattering, shrinkage, and poor weather can be eliminated by harvesting grains at the peak of maturity before these loss factors can occur. Proper drying and storing in the right kind of structures maintains quality and prevents loss from insects, mold, and heating.

How Does Crop Conditioning Work?

Grain in its best condition for harvesting contains too much moisture for safe storage, so it is dried by heated or unheated forced air. Besides eliminating field and storage losses, you save time, clear the field quicker for a second crop, and operate harvesting equipment more efficiently.

How to Select a Conditioning System . . .

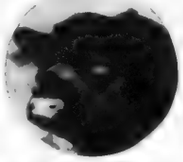
Look for products offered in a "packaged" system in which drying, handling, storing and testing equipment are designed to work together. You will save a lot of headaches and have a much more efficient system. Now is the time to buy, with financial help for you coming from the government storage and conditioning loans and the fast income tax write-off.

Valuable Free Bulletins Help You Plan Your System

You can get valuable aid in planning your conditioning system and keeping posted on new developments from a series of free bulletins published periodically. These bulletins include factual material prepared by Amos Einerson, former specialist in crop conditioning research at Purdue University and chairman, American Society of Agricultural Engineers Committee on Crop Drying. Put your name on the mailing list by writing to J. R. Mayner, Krop-Kare Products Division, Kilby Steel Co., Richland Trust Bldg., Mansfield, Ohio.

Advt.

WANT GREATER BEEF CATTLE PROFIT?



Here is what a SHORTHORN or POLLED SHORTHORN bull can do to increase beef herd efficiency:

increase **weaning weights 50 to 100 pounds . . .** ***increase*** **calf crops 10 to 15 per cent . . .** ***increase*** **yearling weights 100 to 200 pounds . . .** ***increase*** **mature cow weights 100 to 200 pounds . . .** ***increase*** **grazing efficiency and traveling ability . . .** ***increase*** **milk in replacement cows . . .** ***increase*** **resistance to heat, cold, pink-eye, cancer eye and other infections . . .** ***increase*** **carcass value . . . and finally,** ***increase*** **market returns by bringing higher prices for weight.**

Write for literature and sale dates today

AMERICAN SHORTHORN BREEDERS' ASSOCIATION Dept. FQ, 7 Chicago 9, Ill.

ARE YOU A "TOP" FARMER?

Top farmers get 90 bushels or more of corn to the acre against the national average yield of 47 bushels.

Top farmers get far more pigs per litter, have fewer pig casualties, get more pigs to market than average farmers.

On the same size farms, top farmers earn $10,000 more than the average, according to a study made by the University of Illinois.

Reason for the big difference is explained in two words: BETTER MANAGEMENT! And how better management is provided by our organization is fully explained in the new, profusely-illustrated, 52-page book shown here. To get a copy free, just write, wire or telephone our nearest office.

VIRGINIA LANDOWNERS— SPECIAL NOTICE!

Opekasit farm management, appraisals and supervision services are now available to Virginia landowners through a local office headed by two experienced Virginia farm managers. For detailed information please address:

PIEDMONT - OPEKASIT, CHARLOTTESVILLE, VA.

Hamilton, Lebanon, London, Continental, OHIO. Bath, INDIANA. Georgetown, Paris, KENTUCKY. Charlottesville, VIRGINIA. Albany, GEORGIA (also serves Alabama and Florida).

NEW WAYS TO MAKE GOOD HAY

(*Continued from page 39*)

pressure to crack and crush the stems; too much pressure may squeeze some of the valuable plant juices out of the hay.

Not only does the crusher speed up hay making and help to beat the weather hazard, but by preventing leaf loss it often increases the actual amount of hay harvested. Cattle seem to find crushed hay slightly more palatable than the uncrushed.

Undoubtedly the greatest drawback to the wider use of the hay crusher is its cost. A new crusher will run from $1200 to $1500. In working out the economics of crusher usage, the Cornell Experiment Station has come to the conclusion that 100 acres of hay per year would justify ownership of one of these machines. Ted Ames, a northern Illinois farmer, balanced the price of a crusher against a cost estimate on a mow drier he was thinking of installing, decided he would buy the crusher to handle his own 70 acres of hay and line up enough custom jobs on the side to help meet his depreciation and other expenses.

At the University of Wisconsin's Electric Farm hay is mowed with a crusher, picked up with a forage harvester adjusted for a long cut, and dried in the mow. The resulting product is some of the finest looking hay that ever tempted the appetite of a bovine.

As was indicated above, the forage harvester works ideally with either a crusher or some form of artificial drying, since these methods make it possible to pick up and chop the hay before the leaves are dried out to the point where they are subject to much damage from shattering.

After working on cost figures for forage harvesters for some years the Kentucky Experiment Station advises that any man who handles from 125 to 150 tons of forage per year can make a harvester pay out. It was found that when an operator used his chopper for as little as 61 tons per year, the cost of forage chopped was $8.88 per ton. By the time he was handling as much as 288 tons a year, his per ton cost had dropped to $3.52.

Artificial Drying

Barn drying or batch drying—curing the hay in structures designed specifically for this purpose and from which the crop is removed after the drying process is completed—is the last word in the effort to harness the time element in hay making.

With such a system the farmer can take full advantage of the savings of field curing in good weather, he can just about eliminate the hazards of spontaneous combustion, he can save a crop that is in danger of being lost because of bad weather and he can start his hay harvest early and cash in on the higher nutritive value of the immature crop regardless of its high moisture content.

James Stere, Agricultural Engineer, with the C. A. McDade Company in Pittsburgh, is one of the most outstanding drys to hit this country since the days of Andrew Volstead—in working with hay, that is. Stere's every waking hour is devoted to the perfection of hay drying techniques and it is said that some of his best dreams are populated with three-dimension bales, fans, heaters and air ducts. Here is some of the advice he has to give on artificial drying:

"Any farmer with intentions of drying hay had better not lose sight of the fact that a crop of 80 per cent moisture forage when cut has to have 7000 pounds of water removed before it makes a ton of 10 per cent moisture hay. This is a man-size job, especially when a man is working against time making a quality product.

"Of this 7000 pounds of water," Stere goes on, "the first 6230 pounds is fairly easy to get rid of in good drying weather. This part is what we call unbound water. But that last 770 pounds, the bound water tied up with the plant, is what causes the trouble. The only energy available to evaporate it is heat.

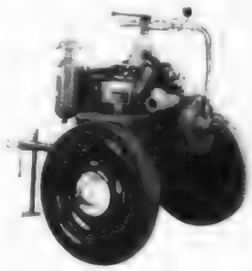
"Now this doesn't mean that a farmer must use artificial heat. Besides the fuels, such as oil, gas and coal, the farmer can also take advantage of atmospheric heat—the air and sun—and the heat from the hay itself. Relying too much on this last form, though, would materially reduce the quality of the hay.

"The farmer should make the fullest possible use of atmospheric heat, both in the field and on the drier. Efficient field work pays big dividends and even in the more humid regions of the East and Mid-West, 5000 to 5500 pounds of the 7000 pounds of water can be removed from a crop of hay in the field the first five hours after cutting in good weather. Even on the drier it is a good idea to use fuel heat very sparingly and only as an assurance of high quality.

"The trend seems to be to handle more water in putting up hay, and at the same time use more air, with fuel heat added for assurance of high quality. Ten years ago we were talking in terms of 10 cubic feet of air per minute per square foot of drier space: now, while the rule of thumb seems to be 25 cubic feet per minute, I have seen some wonderful results through the use of as much as 80 cubic feet, and at reduced cost."

Stere's specialty is drying baled hay. This, he says, involves a revolution in thinking about bale size. "To evaporate the amount of water that is necessary to capture high quality, and to dry within the limited time and at a low cost, a small bale of light density is essential. Over at the Hershey School Farms in Pennsylvania, where hay drying has become a fine art, they use bales that are from 18 to 30 inches long, depending on the amount of

BARNES PUMPS



. . . put the profit in irrigation!

Ask R. B. "Mud" Gardner, Mansfield, Ohio (right above) what his Barnes Pump and irrigation system has done. "Look at these potatoes," he says proudly, "they came from the irrigated section of my farm! I got over 485 bushels of potatoes like these to an acre last year! But, on the section that was not irrigated—*less than half that yield!* Does my Barnes pump and irrigation system pay? You bet your sweet life it does!"

Specialists in Irrigation Pumps

BARNES MANUFACTURING CO.

Mansfield, Ohio — Oakland 21, Calif.

Barnes

Buy the Best . . . Buy Barnes

BARNES MANUFACTURING CO., Dept. FS
Mansfield, Ohio

Gentlemen:
Please send me at once your catalog on Irrigation Pumps.

Name: _____

Address: _____

City. State: _____

Water Source (check) Well_____

Pond _____ River_____

5-HP GRAVELY* Makes Tough Jobs *EASY!

Gravely does jobs other tractors won't . . . because Gravely has that *extra* power for tough mowing, gardening, field and farm jobs.

And you get *more* when you get Gravely: All-gear drive, power reverse, simple, easy operation, power attachments *securely* mounted, quickly interchanged by only four bolts!

PLUS . . . 21 JOB-RIGHT TOOLS!

Your choice of 21 tools . . . used with one versatile tractor that saves you time, work, worry, *all year long.*

"Power vs. Drudgery" booklet shows how Gravely solves your upkeep and gardening problems. Write for it today! Ask about our EASY PAY PLAN.

GRAVELY TRACTORS, INC.

BOX 332 **DUNBAR, W. VA.**

Please send **"Power vs. Drudgery"** and dealer's name.

NAME_____

ADDRESS_____

CITY_____STATE_____

Taking the Risk Out of Farming

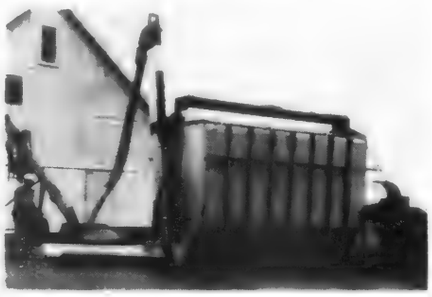
Mike Behlen
Vice-President
Behlen Manufacturing Co.
Columbus, Nebraska

Farmers are notorious for their independent thinking. No two talk alike, vote alike, think alike. Yet, I have found in visiting with my farmer-neighbors, they have one deep-felt desire in common.

It is to stop being totally at the mercy of Nature. Farming is a business. And having to stake everything on the whims of sun, rain, disease is no fun.

A big step forward in this trend toward less gambling and more assured income is artificial crop drying on the farm.

Ever since 1945, my brothers, Walt, Gibb and I with our Dad have worked to perfect a crop drier for the average farm. One that would dry fast enough to be practical, yet was simple enough that a farmer could afford to own and operate.



From Drying Tower to bin—NO SHOVELING! Ample heat and ample air, the key to fast, profitable drying—is the secret of success of this Behlen Combination Drying Tower and Heat Blower.

Small grain growers have told us they have found the answer in our latest model Behlen Combination Drying Tower and Heat Blower. They say this drier permits a farmer to (1) harvest earlier, harvest more (2) store more safely in less storage space (3) get a better market price for dried crops, and (4) save manpower by reducing grain handling.

Fast drying? This Behlen drier reduces moisture content of 350 bu. from 25% to 15% in less than 90 minutes with farm tractor drive. Owners report fuel cost of less than 1½c per bushel.

The galvanized steel tower fills through the top. Grain pours around sides of perforated inner air chamber. Heat Blower generates up to 2,000,000 B.T.U.'s direct heat per hour.

Owners especially like the "Full Cycle" Grain Handling and portable features. Models for propane, natural gas, fuel oil. For more facts on Crop Drying, send for our fully-illustrated folder. Write me, Mike Behlen, c/o Behlen Manufacturing Company, Columbus, Nebraska.

water in the hay, and at no time does a wet bale exceed 50 pounds."

Which For Me?

When a farmer starts to shop for a drying system he finds himself with more selection possibilities than a kid in a candy store. He might put in a mow drying system, in which case he could use a central duct system, a central duct with laterals, or a slatted floor system. He might decide that he wants to use fuel heat in his operation, or possibly he will skip the auxiliary heat and do his curing by air alone. Then there is the question of how large a fan he needs and what source of power he is going to use to drive it, an electric motor or an internal combustion engine. On page 39 are illustrated suggested layouts for two types of mow curing systems. These were drawn for use in Butler Steel Buildings, but they can be adapted to any barn.

The larger operator may find batch drying more to his liking than a mow system. Such a system usually consists of a building large enough to hold up to 20 tons of hay, sometimes even more: it has a slatted floor and uses a crop drier and fan to force the air through the hay. An alternate type is that in which the hay is picked up in the field on wagons with slatted floors or floors of expanded metal. The wagons are pulled into the drying building and the hay is dried on the wagons then unloaded in its final storage place. This wagon system saves much of the labor connected with the other type of batch drying. Fuel heat is a necessity with any kind of batch drier, since the theory of its operation is to dry smaller quantities in as short a time as possible.

A Mow System

Roman Maly, Middleton, Wisconsin dairyman, uses a mow drying system of a type which has had rather wide acceptance in his part of the country. This he has installed in a self-feeding shed 60x36, which is open on one side. It has an air duct down one side of the shed, but instead of building wooden laterals off this duct, Maly forms his laterals from baled hay, then blows his long chopped hay into the building.

He uses flue formers about every 10 feet. These are hollow columns about a foot and a half square and six feet long and closed on top. By pulling these formers up as the hay piles up flues are formed to help the air circulate through the hay.

His drier is a big Robinson fan powered by a 20 horsepower Allis Chalmers engine. With this outfit Maly can dry a crop of 40 to 45 per cent moisture hay in about two weeks. The first three or four days the engine must be run continuously; after that it is operated intermittently for several hours a day. There are those who prefer to use electric power in their operation, but Maly says he'll stay with his gas

GET MORE OUT OF YOUR GAS CUTTING TORCH

Here is a FREE BOOKLET containing helpful information on the use and care of your gas cutting torch. You can get smooth cuts — perfect circles — uniform bevels by the new Burning's Aid method. Write today for your FREE copy of "Fundamentals of Flame Cutting"!

ARCAIR COMPANY
437 South Mt. Pleasant Street
Lancaster, Ohio

NEW! IOWA SUCTION BLOWER

2 SIZES: LARGE Iowa Blower or SMALL Cizek Blower. Belt, P.T.O., electric models.

BIGGER performance at LOWEST COST! Tested and proven *BEST* by most rugged use Iowa farms could give it.

Unloads 3 tons corn silage in 8 to 10 minutes! Also long hay, straw, etc. No-clog pipes. Rubber or steel flexible intake. Long sweeping elbow for *GREATER SUCTION!*

Write for FREE Literature

CIZEK MFG. & DISTRIB. CO., Clutier 2, Iowa

NOW! 100,000 WHITE LEGHORNS ON OUR OWN FARM 31,979 of these are wing-banded birds used in our intensive breeding program. Get the benefits of this program! Three matings offered to meet your needs. Order Creighton Chicks for a profitable 1955!

ARE YOU GETTING "WHITE LEGHORN NEWS?"
Free to Poultrymen . . . write for latest issue!

R.O.P. Creighton Brothers
BREEDERS OF WHITE LEGHORNS
WARSAW 3, INDIANA

NEW! LOWER PRICED **TAG-EZE** Cattle Markers

FAST—Applied In Less Than 30 Seconds.

Complete Unit .95c each, in lots of 25.

Solid heavy brass tag, 40" zinc-plated, rust-proof Jack Link Chain; revolutionary "S" hook... with special 102S Applicator, combines to make the World's fastest applied and safest Cattle Marker. Per Dozen Lots (chain, tag, and "S" hook) at only $1.00 per unit. Individually boxed, clearly labeled. Special 1-25 Applicator for assembling unit—$2.00 each. Interested? Write for further information.

DEPT. BN-923

NATIONAL BAND & TAG CO., Newport, Ky.

FERNDALE FARMS

PURE-BRED HAMPSHIRE HOGS AND ABERDEEN-ANGUS CATTLE
BOARS AND GILTS FOR SALE AT ALL TIMES

Grand Champion carcass at 1954 Ohio Barrow Show was produced and shown by us. Unrelated weanling pigs $100 per pair. Also the 1953 Grand Champion Boar at the Ohio and Indiana State Fairs was owned and exhibited by:

FERNDALE FARMS
Arthur B. Evans, Box 50 - - - Cedarville, Ohio
One of the oldest and Largest Herds in America

engine. He feels it is very reliable and economical and he is also of the opinion that the air used in the drying operation picks up just enough heat as it passes over the engine to help a little in the drying.

The designer of this system estimates that a similar layout, using lumber for the laterals rather than hay bales, would cost not more than $1700. Drying costs depend entirely on the moisture content of the hay when laid on the drier and weather conditions during the drying period. Maly quotes figures of 75 cents to $1.50 per ton; others say they have seen their cost go to $2 to $4 per ton.

Where the hay drying installation is located close to power lines and the local utility is prepared to furnish sufficient current to power a 3 to 10 horsepower motor as well as to handle the milking machine, deep freeze, kitchen range, deep well pump, milk cooler, radios, TV and other assorted appliances, an electric motor is a cheap and efficient source of power for the drier fan. One of its advantages over the gas engine is that it can be hooked up with automatic controls to operate only at certain predetermined times. This is a distinct advantage in the latter part of the drying period when the hay has been cured to such a low moisture content that it would actually gain rather than lose moisture if the fan were to run at night.

As to cost of operation, a 5 horsepower motor will use about 4½ to 5 kilowatts of current per hour under a full load. The Cornell Experiment Station on the basis of five years experience reports a cost of $1.06 to $2.64 per ton for electricity when the hay was put on the drier at moisture contents varying from 33.3 to 51.0 per cent. Thirty-five to 90 kwh of electricity were used per ton of dry matter preserved.

Any farmer interested in installing a mow drier would do well to get the advice of his experiment station and of local experts who have the training and experience to plan a satisfactory system and select a fan and motor of the right size.

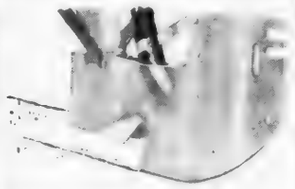
The cost of a mow installation? That depends on the size of the job as well as the size of the farmer's budget. The basic unit of a motor, guards, and fan will cost around $650. Another $100 should cover the wiring job. On top of this comes the cost of ducts and tunnels, the total of which depends on how elaborate the system is to be. The Louden Machinery Company, for example, builds a very efficient all metal "Uni-Duct" system that can be purchased ready to install.

Batch Driers

The Hershey School Farms, Hershey, Pennsylvania, have a big batch drier on one of their farms that could be used as a model by anyone looking for ideas on how to set up this type of operation. The building itself is 80x40 with a protected loading area and weather shields on the long sides. It is of timber frame construction and

BURCH TRU-DROP POWER-LIFT PLANTERS

Featuring Exclusive
BURCH WINGED SWORD



Puts Fertilizer Below Seed...
as recommended by leading agricultural authorities . . . assuring better placement of fertilizer, bigger yields. "Stoodited" edges for unequaled wear — a BURCH exclusive!

ONLY truly flexible power-lift planter — most widely used in America! Units float independently to maintain uniform planting depth. Hoppers hold a BUSHEL of seed. Available in 2-Row or 4-Row models, furnished with or without fertilizer attachment. Steel or rubber tires. See your BURCH dealer for full details, now.

Also available for Fordson Major Tractors

BURCH PLOW WORKS, Dept. Q-25, Evansville, Ind.

SPECIALIZED POWER-LIFT AND DRAWBAR IMPLEMENTS
- Wheel-Type Disc Harrows
- Standard Disc Harrows
- Surface Cultivators • Packers
- 2, 4, and 6 Row Harrows
- Spike-Tooth Harrows
- Ridgers • Sub-Soilers

Send free fully descriptive literature:

NAME_____

STREET OR R.F.D._____

TOWN_____ STATE_____

20 MILLION TREES A YEAR! AND MUSSER TREES GROW

FREE CATALOG

XMAS TREE GROWERS' GUIDE

Results justify the care taken in selecting true strains of seed and in employing the highest standards of nursery culture.

HEAVY ROOTS and STURDY TOPS

Musser seedlings and transplants grow readily on waste land.

With Musser's tremendous volume you are assured of the greatest value. Wholesale prices and planting lists on request.

Grow Xmas Trees for waste land profit

MUSSER OUTSTANDING SPECIALS

(POSTPAID, AT PLANTING TIME)

25 EVERGREENS - - - $5.00
Selected 3 to 5 yr. trees, 6" to 16" tall. 5 each of Colorado Blue Spruce — Scotch Pine — Austrian Pine — Norway Spruce — Concolor Fir.

5 BLUE SPRUCE - - - $3.50
Famous Colorado Blue Spruce — excellent 6 year transplants, 8" to 12" tall. Blue-green to marvelous blue. Compact, sturdy, make handsome trees or hedge.

10 RHODODENDRON - $4.00
Single stem to lightly branched, 7" to 12". Fine young plants — will grow bushy. Maximum — Excellent ornamental, Large clusters of gorgeous flowers. Prefer partial shade. Natural "woodsey" effect.

MUSSER FORESTS, INC. BOX 6D, INDIANA, PA.

2 h.p. as shown only **$134** complete*

Ask your dealer for a demonstration; or write us today for informative illustrated full color catalog and name of nearest dealer.
(A few dealer franchises are still available.)

ROTO-HOE
GARDEN TOOLS

America's Most Usable Garden Tool!

TILLS — CULTIVATES — COMPOSTS

Tens of thousands of users find ROTO-HOE ideal for year 'round jobs. A big machine at modest cost, thoroughly engineered and field proven for over 7 years! It will pay you to investigate.

YEAR 'ROUND ATTACHMENTS use same basic power unit!

20" ROTO-CUTTER, only $34.50
16" ROTO-BUZZ SAW, complete $42.50
16" ROTO-SNO BLOWER, only $38
5 gal. ROTO-ZEPHYR SPRAYER only $77
Adapta-Cart, for mounting compressor, generator, other tools for easy portability, only $11.50

ROTO-HOE & SPRAYER COMPANY
Box 7 Newbury, Ohio

the roof is covered with aluminum sheeting. The floor is a false floor built up 12 inches and covered with 1x3 in. hardwood slats laid on 6 in. centers. A divided plenum chamber, or air duct, extends across the width of the building and each half of this chamber is supplied with air by a 42 inch fan powered by a 10 horsepower electric motor. Each fan has a capacity of 34,000 cubic feet of air per minute. The building has a capacity of 120 tons of dried hay when the bales are stacked 10 feet high.

Heat is supplied by a Dravo Counterflo heater located in a small lean-to adjoining the building. The heater burns Number 2 fuel oil, has an output of 2,000,000 Btu.

This is strictly a tool for the big time operator as the building with heater, motors and fans installed would cost $20,000 to $22,000 at today's prices. However, it is an excellent pilot model for any farmer to study who is interested in batch drying.

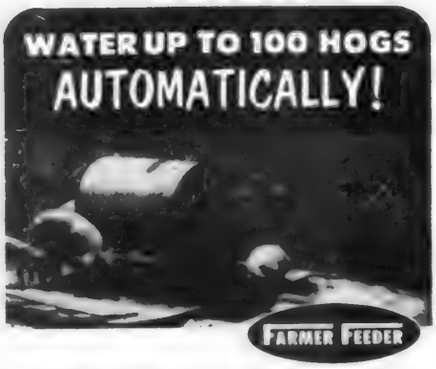
There is no manual lifting of bales in loading or unloading the drier. The management of the Hershey Farms, with the assistance of a local conveyor dealer, has rigged up a conveyor which is suspended from the beams and works back and forth across the building. The bales are always lowered rather than raised. They are taken off the wagon and put on the conveyor, then dropped off the conveyor which is always higher than the layer of bales on which the man is working. This same conveyor is also used for unloading the building after the hay is cured, the bales being dropped onto the conveyor and moved along to the wagon.

When this drier was first built it was the practice at the Hershey Farms to begin baling when moisture content of the hay had dropped to 30 to 35 per cent. The manager says they found that they got much finer hay when it was baled at 50 to 55 percent moisture, though, and that it is now their practice to work entirely with this higher moisture forage. Drying is ordinarily accomplished in 2½ to 4 days. Last year the drying operation cost $3.69 per ton, including fuel oil, electricity and the labor of loading and unloading.

On a smaller scale the Peirson-Moore Company, Lexington, Kentucky, has worked out a system that can be installed in the average barn for about $2,500. This includes an expanded metal floor, heater, fan and motor.

Another interesting drier is the general purpose crop drying building designed by the University of Wisconsin. This building, illustrated on page 38, is 20 feet wide and 40 feet long. It has a capacity of 16 to 20 tons of dried hay and can be used for drying ear corn as well as forage crops. With some modifications in the floor it could also be used for drying small grains and shelled corn.

The building is divided into two separate bins by a plenum chamber 3 feet

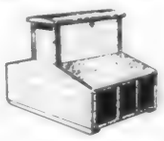


ROLL-A-VAC hog fount

Automatic, trouble-free operation . . . no floats, valves or gaskets. Saves time and work. Rolls up to fill from hose, bucket or pump . . . then down to drink. Easy to clean and move. Holds 85 gallons. Has 8 separate drinking spaces.

PIG-O-MAT

Starts pigs on solid feed! Saves pigs, time and work . . . makes possible fast, healthy growth. Self-contained. Automatically supplies over 7 bushels of dry feed for up to 32 pigs. Farm tested and proved.



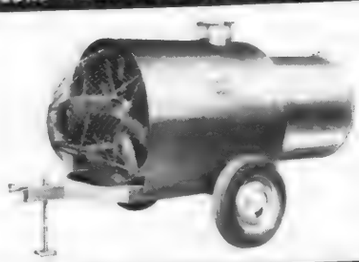
Wood-Steel Clad FEEDERS

Fatten faster, save labor and feed in raising pork. Automatic agitation assures self-feeding. Easy to fill. Available in many sizes to feed 10 to 125 hogs.
WRITE TODAY for free folder FQ.

FARMER FEEDER CO., INC.
Cambridge City, Indiana

Don't Gamble with the WEATHER

CURE YOUR HAY THE SAFE WAY



WITH A HARTZELL CROP DRIER

- eliminate the weather risk
- increase feed or sale value

Heat, plus the power to penetrate. Compact. Lightweight. Portable. Rugged. Foolproof. Completely safe. That's the Hartzell crop drier. And it comes as a complete package — no extras to buy. See your dealer or write for details.

HARTZELL PROPELLER FAN COMPANY
Agricultural Division — Dept. F Piqua, Ohio

☐ Please send me more information on the Hartzell crop drier.
☐ Please get in touch with me about a demonstration.

NAME _____
ADDRESS _____
CITY _____ STATE _____

NEW MEYER HAY CONDITIONER

Make HAY the MEYER way

Hay cured MEYER WAY is worth more to sell or feed. Stems dry fast as leaves...leaves stay on...hay retains color, protein and up to 300% more carotene (Vitamin A). Cuts and conditions hay at same time. Curing time cut in half—hay can be put up same day it's cut. Danger of sun burning, bleaching, rain spoilage is reduced. Features Exclusive Floating Rotary Pick-up that raises freely over rocks and terraces.

Write for FREE Folder and Prices Today!

MEYER MFG. CO.
BOX 7152 MORTON, ILLINOIS

MAKERS OF FAMOUS MEYER ELEVATORS

ESHELMAN ROTARY TILLER
FOR BETTER GARDENS

Also Riding Mowers

Triply useful. Replaces plowing, discing, and cultivating. Turns virgin ground into Garden bed in 1 operation. Women can operate it. Write for illustrated catalog.

MAKES PLOWS CULTIVATES HARROWS HAULS SPRAYS SAWS DOZER MOWS CUTS ROLLS TILLS SNOW PLOW

ESHELMAN FOR Better LAWNS And GARDENS

Also Walking Tractors low as $69

Write for Eshelman Catalog

Available in 1 to 8 H.P. Woman can operate it. Built for powerful and dependable service. Free Catalog: Write

ESHELMAN CO., Dept. R-103
109 Light St., Baltimore 2, Md.
333 N. Michigan Ave. Chicago 1, Ill.
6087 Sunset Blvd. Los Angeles 28, Cal.

"We sure are in demand"

A flock of Hampshire Sheep is the ideal diversified live stock program for the cattle, hog and poultry breeder.

For Breeders List

AMERICAN HAMPSHIRE SHEEP ASSOC.
72-Q Woodland Ave. Detroit, Mich.

NO MORE RUST SPOTS ON MY CLOTHES
SEND FOR THIS BOOKLET
A DIAMOND Iron Remover
Oshkosh Filter & Softener Co.
Oshkosh Wisconsin

WESTERN FARM MANAGEMENT COMPANY

Our 21st Year of Service

FARM AND RANCH MANAGEMENT
•
APPRAISALS
•
INVESTMENTS
•
AGRICULTURAL DAMAGE APPRAISALS

WFMCo

625 Market St., San Francisco 5, Calif. • YUkon 2-1062
801 North First Ave., Phoenix, Ariz. • Alpine 8-6776

wide and 8 feet high. Heated air is blown into this chamber from a portable crop drier located behind the building. The air is forced under a slatted floor, up through the hay and out through openings in the gable ends of the building.

An automatic unloading device is one of the features of this design. Against the back wall is a sliding gate which can be moved forward by cables which wrap on a drum under the floor. Then there is a conveyor 19 inches wide extending along the front of the building by means of which the dried material can be elevated into wagons, trucks or adjacent storage buildings.

H. D. Bruhn, agricultural engineer, University of Wisconsin, estimates that this building can be constructed for less than $5,000 and that it can dry 16 to 20 tons of chopped hay in a day.

Wagon Drying

One of the big objections to batch drying—the labor of loading and unloading the drier—is completely eliminated with wagon drying. Most of these systems are extremely individualistic, but representative of the lot is the outfit shown on page 36. This system uses a steel building, a crop drier, supply and return air ducts, four wagons with expanded steel floors and canvasses to cover the wagons and hay during the drying process. A setup like this currently sells for $6,000 knocked down f.o.b. the factory, at Lexington, Ky.

This drier can handle 8 tons of hay overnight when the forage is baled at 40 to 45 per cent moisture content. Operating costs run from $3.50 to $5.00 per ton. The various parts for this system can, of course, be bought separately and any farmer can devise his own tailor-made system from plans furnished by his experiment station. Wagon beds of the kind used in this system cost $380 and the drying unit with a 36 in. Delco fan and motor sells for $1,595.

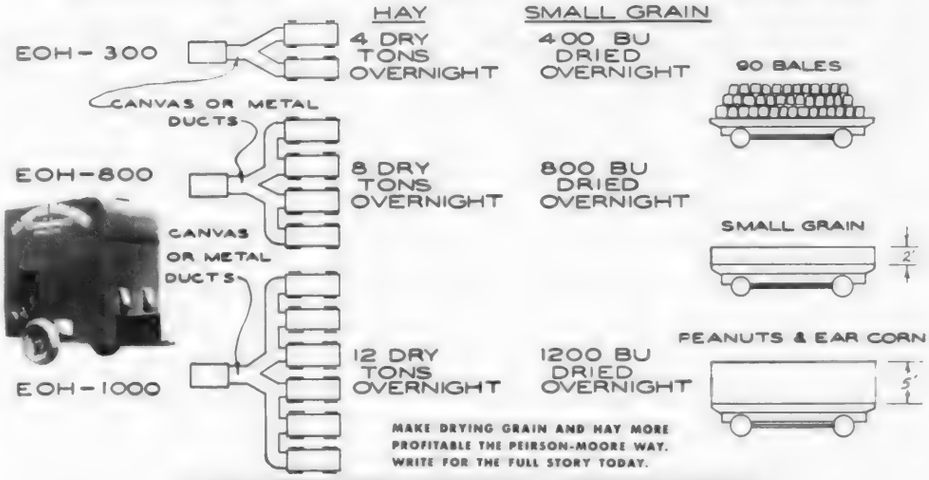
One of the most recent innovations in batch drying is dual or multiple unit driers in which the drying is started on one batch of hay and as soon as the moisture has been reduced to around 25 per cent, the air is circulated from the first batch to a second fresh batch, thus re-using the air. When the first batch is completely cured it is removed and a third batch then gets the recovered air from the partly dried second batch, and so on.

The prediction has been made that the day is coming when hay will be classified as either roughage or feed hay. At the rate the present revolution in haymaking is progressing that day is not many dawns removed.

THE SURE CURE WAY OF DRYING GRAIN AND HAY

THE METHOD FOR BETTER RESULTS WITHOUT EXTRA LABOR

CHOOSE THE SIZE TO MATCH YOUR FARM OPERATION



MAKE DRYING GRAIN AND HAY MORE PROFITABLE THE PEIRSON-MOORE WAY. WRITE FOR THE FULL STORY TODAY.

PEIRSON-MOORE COMPANY • LEXINGTON • KENTUCKY

Big News for Big Yields

Soybeans, Clover, Alfalfa—All Legumes

The new NITRAGIN legume inoculants put extra billions of nitrogen-fixing NITRAGIN bacteria to work on your seeds—helps increase nodulation, yields, soil benefits. Get new NITRAGIN at your seedman's.

More Inoculation for Your Money

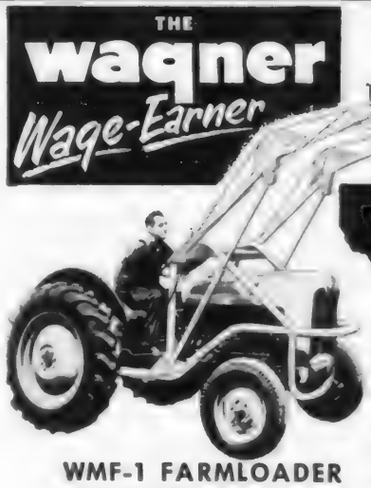
The new NITRAGIN soybean can is bigger than ever, yet priced the same. Gives you still more inoculation per seed, used with or without water.

THE NITRAGIN CO.

3267 W. Custer Ave., Milwaukee 9, Wis.

THE wagner Wage-Earner

Rugged, Low Cost LOADER



WMF-1 FARMLOADER

Fits Ford Series 600, 800, NAA, 8N, 9N; Ferguson TO-20, TO-30, Oliver Super 55, A-C CA, John Deere 40U, 40S; Cockshutt 20.

Step-in design (get on or off tractor from either side or rear). Unobstructed vision. Attaches with 6 bolts in 15 minutes. Complete access to tractor for servicing. Full clearance under tractor. Priced for the average farm. Made by world's oldest and largest loader manufacturer (104 years in business; over 100,000 in use).

Built to heavy industrial standards—long life, safety, no sway. Breakaway capacity 1800 lbs. Long reach for clean loading, less chance to damage spreader, truck or wagon box. Attachments for every need: Combination manure fork and material bucket; manure fork; utility bucket; crane boom; backfill blade; utility box.

Other models for all uses—farm and commercial—for all sizes and makes of wheel tractors including Cockshutt, David Brown, Fordson Major, and light crawlers. Swing loader for close-quarter side loading.

Send coupon for full information on Wagner loaders for your tractor.

wagner
WORLD'S LARGEST —AND OLDEST— LOADER MANUFACTURER

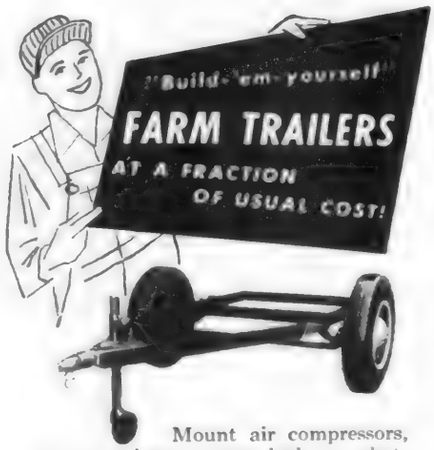
Wagner Iron Works
1905 South 1st St.,
Dept. 7-B, Milwaukee 11, Wis.

Send me more information on Wagner loaders. I have a ..... tractor.
(Make)

NAME.....

ADDRESS.....

CITY & STATE.....



Mount air compressors, cement mixers, wagon beds or what-have-you . . . build your own "box" trailer and livestock or horse trailer . . . with easy-to-use Hammer Blow running gear. We can furnish—from stock—a wide variety of couplers, jacks, complete axle assemblies and component parts. Get a few short lengths of steel, hook up your arc or gas welding outfit, and *mobilize your farm equipment at a fraction of "finished" cost!*

Or if you'd rather, we can build a complete undercarriage—as shown—to your specifications. Single or tandem axles. Capacities range to 10,000 lbs.

Over 30 years of making customers happy...write and tell us what you need! Distributor and dealer inquiries invited.

HAMMER BLOW TOOL CO.

WAUSAU 4-C, WISCONSIN

SAVE $11 to $16 a ton on feed with...

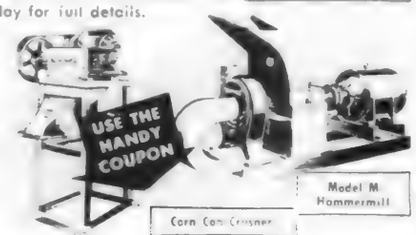
MIX YOUR OWN FEEDS

KELLY DUPLEX FEED MIXERS

Mix your own cattle, hog, poultry feeds. Get a perfect blend in 10 minutes, save 55c to 80c per 100 lbs. Rugged—easy to operate—absolutely noiseless.

It's just as easy and profitable to make your own poultry litter with a Kelly Duplex Cob Crusher—or to grind grain with a Kelly Duplex Hammermill. Satisfaction guaranteed or your money back. Mail coupon today for full details.

Vertical Mixers — all sizes—small as ½ ton



CLIP COUPON AND MAIL TODAY!

The DUPLEX MILL & MFG. CO., Box 13, Springfield, Ohio

Send me full details on items checked.

☐ Feed Mixers____ton cap. ☐ Cob Crusher ☐ Hammermill

NAME_____

ADDRESS_____

NEW IDEAS IN GRASS SILAGE

(*Continued from page* 35)

but the distribution throughout the silage was spotty. Throwing the grain on top of the load as well as in the bottom of the wagon is another suggestion that gets better distribution. In filling an upright silo a man can be assigned to the laborious job of shoveling the grain into the blower with the silage. The moral is watch your moisture content and don't put up any silage that is so wet as to require a grain conditioner.

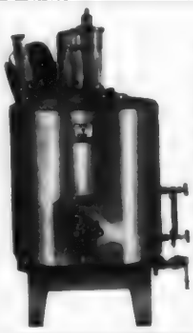
The amount of concentrate conditioner to apply depends entirely upon the moisture content of the forage. At 70 per cent moisture, the forage would need 100 pounds of grain per ton: at 75 per cent moisture, 200 pounds of grain per ton should be added and 300 pounds will be needed when the forage contains 80 to 85 per cent moisture.

Another good preservative is molasses. Molasses won't be of much help in drying up excessively wet forage, but it works well with more mature grasses and legumes in providing the sugar needed in the fermentation process. In filling an upright silo, it is a pretty simple matter to rig up a drum alongside the blower and let the liquid molasses flow over the forage as it is fed into the silo. In filling a horizontal silo it is easier to use dried molasses spread on the wagon or over the top of the load the same as the ground grain. It takes 60 to 80 pounds of molasses per ton of green crop. With excessively wet material it will take 100 pounds per ton.

American farmers have never had a high regard for the A. I. V. methods which use a combination of hydrochloric and sulfuric acid to preserve the silage. The way these acids attack clothes and equipment has always made them fearful of what it might do to the inside of a cow. But the A. I. V. principle, which is to provide the correct amount of acid for the silage by supplementary means, has been applied in this country by the use of milder phosphoric acid (which has never proven popular) and by the use of sulfur dioxide gas. The gas is applied under pressure by means of a probe stuck into the silage. Applying the sulphur dioxide gas is a laborious and somewhat dangerous job, so inevitably someone was going to come up with a simpler method. The Department of Animal Nutrition at Penn State did just that.

Sodium Bisulfite

Some of the staff members had had experience in food preservation in industry where a common preservative is sodium bisulfite or sodium metabisulfite. This is a white, free-flowing powder, marketed in 100-pound paper bags, safe to handle and easy to apply uniformly to unwilted silage. The Penn State workers started using this powdered compound with grass silage and the results were all they had hoped for. When the sodium metabisulfite comes in



VAT PASTEURIZER

(Meets all Local Health Codes and U. S. Public Health Service Requirements).

Available for direct steam from 25-125 gals. sizes.

Electrically Heated 25-35-50 gals. sizes.

VULCAN-HART MFG. CO.
2006 North Western Parkway
Louisville 3, Kentucky

VETERINARY PRODUCTS DIRECT to YOU

All the latest effective treatments employed by leading veterinarians and herdsmen. *Discounts available on quantity shipments.*

Write for our Dairy Bulletin and Veterinary Catalog.

ANCHOR SERUM CO.
of INDIANA, INC.
INDIANAPOLIS 6, INDIANA

METER YOUR GRASS INSILAGE PRESERVATIVE

ADJUSTABLE CAPACITY

POWER: ¼ H.P. ELECTRIC

AVAILABLE IN PORTABLE OR CLAMP-ON TYPE

PALSGROVE MFG. CO.
CANAL WINCHESTER, OHIO

FOR YOUR TRACTOR
ROTARY TILLER ATTACHMENT

- Special models for all popular tractors
- Attaches quickly & securely in minutes
- 12" to 50" wide—6" deep in 1 pass
- Most rugged construction on market
- Handles all jobs in any kind of soil

Years of Experience — Thousands in Use

PORTA-SPADE
POWER-TILLER

ONLY 35 POUNDS
GASOLINE OR ELECTRIC

Univator

SEE YOUR DEALER OR WRITE

UNIVATOR, INC., 2032-33 Center Street, Berkeley, California

The FARMER'S BOOK CLUB

Offers you the best new books on all aspects of farming—practical and theoretical—with emphasis on the "new agriculture". For information and free list of basic books for a farm library, address the club at 23 East 26th St., New York 10.

contact with the crop moisture it produces sulfurous acid which checks the bacteria activity and makes a bright-looking silage with no bad odor. It has no effect on seepage and it adds no nutritive value to the silage, although it does do a good job of preserving carotene.

There seems to be just one rate of application for the powder—approximately 8 pounds to a ton of forage—and it must be evenly distributed. Less than that amount will be ineffective, more is not only wasteful but in very excessive amounts may make the silage unpalatable. Amos Smith, Low Point, Illinois, put 250 tons of alfalfa, red clover and brome grass in a trench silo last spring and added 4 pounds of bisulfite to each ton of crop. There was no apparent improvement in the silage, which fed out at a much darker color than is characteristic of bisulfite silage.

Jay D. Weil, who headquarters at Lexington, Kentucky, and operates extensive livestock enterprises throughout the south, is a firm believer in the value of powdered bisulfite. "We put up about a thousand tons of grass silage on our place down in Mississippi every year," he says, "and we use bisulfite on every load. It makes us some mighty nice silage."

Explaining how the preservative is added to the green material, Weil continues "We use a Lundell chopper to cut the grass and have a gadget like a fertilizer hopper mounted on the chopper to meter the bisulfite onto the forage as it is blown into the wagon. That gives us perfect distribution."

This same method has been used with success by scores of other farmers. Another method of application is to hook up the same kind of device, usually made from a fertilizer hopper, on a stationary blower at the silo. Gravity feed applicators work well, too.

There are a few precautions to be observed in using bisulfite. Don't wilt the grass. The preservative does not work well with forage that is too dry. Keep the rate of application right at the eight-pound per ton mark. If you are blowing into an upright silo—and bisulfite seems to be more important for silage in upright silos than in trench silos—do not try to keep a man in the silo while filling. A sudden burst of powder would be very irritating to the eyes and nose, though not dangerous.

There is a good deal of disagreement around the country as to the actual value of using sodium bisulfite. It costs anywhere from 8 to 14 cents a pound and there are those who feel that at the higher prices it is too expensive for the work it does. In areas where it cost 12 cents a pound last year farmers have been heard to say that they would rather take a little more time and learn how to get along without preservatives. The real test as to the value of bisulfite is to compare it with other methods, bearing in mind the rela-

Now! Amazing New Way to keep your silage fresh, green, sweet-smelling!

Now, General Chemical, 50-year leader in agricultural chemicals, brings you another great new farm aid. This time it's STA-FRESH—the handy, low-cost sodium bisulfite powder that keeps silage fresh, green and sweet-smelling.

STA-FRESH insures a superior feed with less work at lower cost. It is already highly recommended by many county agents and agricultural leaders. STA-FRESH has been used with success on alfalfa, orchard grass, brome grass, ladino, sweet clover, timothy, vetch, oats, other forage crops.

Cows prefer STA-FRESH-treated silage. In a typical free-choice test, cattle ate an average of 63 pounds of bisulfite-treated silage to 18 pounds of untreated silage.

STA-FRESH keeps silage sweet-smelling, too; rids it of that "silage stink" that fouls your clothes, smells up the barn, and may taint milk.

Get the facts on STA-FRESH right away. Your Orchard Brand dealer has it in 100-lb. bags—and complete details on how to use it. See him today.

STA-FRESH* Silage Grade Sodium Bisulfite

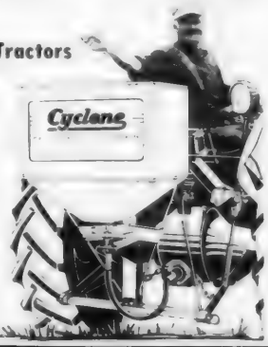
ORCHARD BRAND SPRAYS • DUSTS

*General Chemical Trade-Mark

GENERAL CHEMICAL DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

Serving Agriculture Everywhere

THE Cyclone — Fits all Tractors



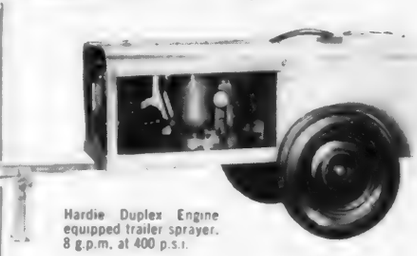
Power Seed Sower and Fertilizer Distributors

ECONOMICAL and **DEPENDABLE**, pay for themselves with fast, easy broadcasting of grass seed (including brome) grain and fertilizer. P. T. O. or motor driven. 1 and 3 bushel sizes. With extension hoppers added, 2½ and 5 bushels. Send for free *literature* and *informative grass land booklet.*

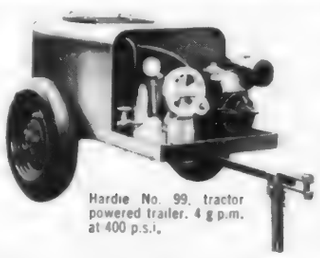
THE CYCLONE SEEDER CO., INC.
Urbana 12, Indiana

Hardie builds a Sprayer for your INDIVIDUAL JOB

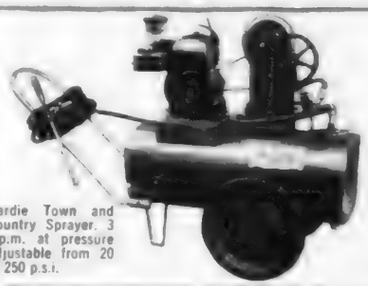
You can buy the particular sprayer that exactly fits your requirements, large or small. You can find the size you want in many models—in its most advanced and modern forms. High Pressure Sprayers to deliver from 3 g.p.m. at 20 to 250 p.s.i. to 80 g.p.m. at 1000 p.s.i., air blast sprayers in a wide range of models for both dilute and concentrate sprays. Air blast row crop sprayers and dusters. Sprayers for cattle, weed control, orchard and crop spraying and general use. Hardie Rain Control Portable Sprinkler Irrigation systems make water go further, do more. Write for catalog.



Hardie Duplex Engine equipped trailer sprayer. 8 g.p.m. at 400 p.s.i.



Hardie No. 99, tractor powered trailer. 4 g.p.m. at 400 p.s.i.



Hardie Town and Country Sprayer. 3 g.p.m. at pressure adjustable from 20 to 250 p.s.i.

HARDIE
DEPENDABLE EQUIPMENT
• SOLD AND SERVICED ALL OVER THE WORLD

The Hardie Manufacturing Company Hudson, Michigan
3825 Santa Fe Ave., Los Angeles, California
1435 N. W. Northrup St., Portland 9, Oregon
Export Dept., Book Tower, Detroit 26, Michigan

Please send catalog.

Name _____

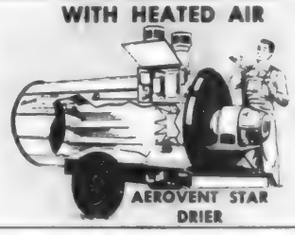
Address _____

City _____ State _____

MORE FARMS WANT AEROVENT FOR CROP DRYING

- Get better milk production with lower feed costs by saving the leaves with planned hay drying.
- Use Aerovent fans. They're rugged and dependable, with guaranteed ratings.
- They're safe and easy to install. They're trouble-free because they're non-overloading.
- FREE ENGINEERING SERVICE. Get competent recommendations.

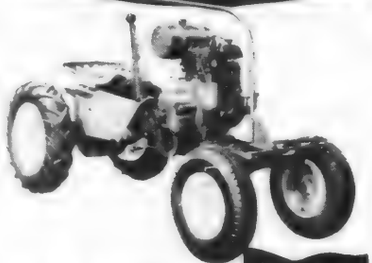
WITH HEATED AIR



AEROVENT STAR DRIER

AEROVENT FAN AND EQUIPMENT, INC.
Box 28, Department Q, Lansing, Mich.

ONE low-cost machine makes FUN of your work . . .



BEAVER Riding Tractor

Full 8 h.p. Wisconsin Heavy-Duty Motor

MOWS Fields Lawns
PLOWS DISCS CULTIVATES
SAWS
CLEARS SNOW
HAULS
ROLLS
GRADES

With far superior heavy-duty implements and accessories, handles *all* chores, tough maintenance and field work on small or large estates . . . teams up perfectly with the big machines on farms. So easy to ride and handle, work becomes fun. Get the facts. Compare the VALUE. Write for literature, name of dealer.

MANUFACTURED BY
THE BAIRD MACHINE CO.
High Production Machinery Builders Since 1849
Dept. FQ Stratford, Conn.

BBT55

tive independence of weather conditions it gives the silage maker.

Equipment

Grass silage is an impossibility without plenty of power equipment for every step of the operation from the field to the feed bunk. No matter how beautiful your meadow, forget grass silage unless you have the equipment to handle it. Here is what you may need:

For harvesting: A mower. This, of course, is elementary. Any farmer who puts up hay—and that means practically every farmer—has a mower. But a windrow attachment for the mower is a less common piece of equipment, though not at all expensive. Fifty dollars would probably be the top price on any of them. This attachment is simply a series of long, flat steel fingers on the trailing edge of the cutting bar which roll the forage into a windrow immediately after cutting. Some are designed to throw the cut material to the outside of the swath, others lay it down the middle of the swath. The latter type seems to work better with long, heavy forage.

Some manufacturers make a large windrower that looks like the reel and sickle bar off a combine. These are made in lengths of 8 to 14 feet and are excellent for working in big fields.

The field forage chopper, or harvester, is the implement that has been the key to the upsurge in grass silage production. With a wagon or trailer hitched behind, these ravenous grass eaters can move down the field either making a direct cut of the standing crop when the forage is relatively dry and mature, or picking up from the windrow after a wilting period. They come in a size for every farm, from the standard 50 to 56-inch cut up to the huge self-propelled Field Queen with its 7-foot cut. Most of these choppers can be adjusted for a theoretical cut of anywhere from 3 inches down to 3/8 inch. The theoretical cut is the length of the forage that hits the knives at right angle. The practical or average cut will be somewhat longer.

Most forage choppers have four knives. Ag engineers working with these machines are finding that the addition of two more knives will not only give a finer cut but will often reduce the horsepower requirements for operation. A good chopper should provide a quick conversion of cutting lengths, should have enough power to operate without clogging and to blow the heavy forage all the way to the back of the trailing wagon.

Some indication of the cost of operating a field chopper is given by custom rates charged in Wisconsin last year, an average of $10.30 per hour. This included two men and two tractors, the operator furnishing the fuel.

Self-unloading wagons or some kind of unloading attachments are a must at the silo end of the process. Hydraulic lifts,

NEW LANTZ
Reg. U.S. Pat. Off.
"SWINGING" SICKLE GRINDER

Lantz Engineers have designed a new model of the famous Lantz "Swinging" Sickle Grinder. The grinding wheel, mounted in a swinging arm, is an exclusive Lantz principle . . . grinds coming and going . . . easier, faster. The new model is

LIGHTER, HANDIER, STURDIER
MORE COMPACT, LOW COST

Grind your own sickle bars . . . save time and money. One man, unassisted grinds sickle bars 1 to 7 feet long. Extension arms support long sickles. Drilled for mounting on bench or wall. Powered by ¼ h.p. new G-E Motor.

ONLY $37.50
f.o.b. factory Motor extra. Slightly higher in west.

CUT OUT this ad now and mail it for free literature, and name of nearest dealer.

LANTZ MANUFACTURING CO., INC.
Also makers of famous Kutter-Kolter Special Coulters and Hay Forks.
Dept. SC-530 Valparaiso, Indiana

1955's Finest Flower Value!
DAYLILIES

PALE CREAMS TO DEEP REDS

4 LUXURIOUS PLANTS • EACH DIFFERENT Only $1
1st Time at This Low Price!
Hardy — Easy to Grow — Blooms This Year!

Huge price cuts on popular perennials. Big beautiful blooms in gorgeous colors. May 'til frost. Lovelier each year. Shipped at your planting time. ORDER NOW—collection of 4 luxurious varieties, ppd. in U.S., only $1.00 (no COD). Send 25c for big new Peony—Iris—Daylily color catalog and get FREE "Delovely" Dwarf Iris (both FREE with Daylily order)!
Gilbert H. Wild & Son, Dept. FQ-35, Sarcoxie, Mo.

SUNBEAM CHICKS

"BEST UNDER THE SUN"
U. S. Pullorum Typhoid Clean
In All The Leading Breeds
Free Illustrated Catalog
SUNBEAM HATCHERY
Box 40 Findlay, Ohio

RATS
WISCONSIN ALUMNI RESEARCH FOUNDATION
kill 'em with

warfarin

Cut Feeding costs up to 40%

If you feed Hogs, Cattle, Sheep or Poultry you need a BELL "Modern" Hammer-Mill to get the most profit out of farming.

GRIND YOUR OWN GRAIN & ROUGHAGES

Cut feeding costs and increase the weight of stock animals by feeding home-grown, GROUND shelled or ear corn with or without shucks, oats, wheat, alfalfa, clover and soy bean hay. A BELL "Modern" Hammer-Mill will do it for as little as ¾ of a cent per hundred pounds. 1000 pounds of properly ground feed often produce as much Milk or Meat as 1250 lbs. of unground feed, thus the highest possible Feeding Value for growing pigs, and other stock animals is obtained at the lowest cost per pound of increased weight.

SAVE MONEY ON GRINDING COSTS!

BELL HAMMER-MILLS are made for ELECTRIC or ENGINE POWER, in 2 Universal, Low Cost Sizes. Capacities up to a ton of shelled corn thru a ¼" screen, or 1400 lbs. of ear corn thru a ⅜" screen, per hour. Write today for full information.

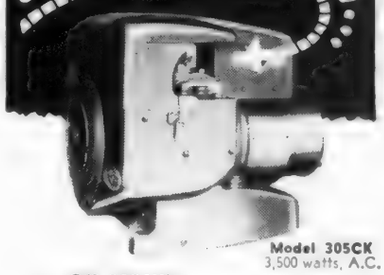
BELL'S *NEW MODERN* **HAMMER-MILLS**

Send for Special Illustrated Folder and Prices today.

THE C.S. BELL CO. *Mfrs.*
Dept. F. **HILLSBORO, OHIO.**
CORN SHELLERS HAMMER-MILLS FEED MIXERS

When power fails— or voltage drops—

Just push this button



Model 305CK
3,500 watts, A.C.

...on your ONAN Electric Plant

Insure your electric power supply. An Onan gasoline-driven Electric Plant furnishes regular 110-volt electricity for lights, pumps, milkers, oil burner, freeze chest, etc., when storms cut highline power. Easy to install. 1,000 to 100,000 watts, A.C.

Also available: Onan A.C. Generators only (belt up to your tractor for power). 3,000, 4,000, 7,000, 10,000 watts

Write for Folder

Onan PRODUCTS
D. W. ONAN & SONS INC.
2877 Univ. S.E., Minneapolis 14, Minn.
ELECTRIC PLANTS

false endgates, movable floors and other devices can either be purchased or improvized to move the material out of the wagons and into the silo.

Hay loaders have been for a long time one of the most deadly drugs on the used farm equipment market. Now, however the hayloader, the heavy-duty type, is coming back into the picture. The man who has no access to a forage chopper and who wants to make long grass silage will find this a practical substitute for picking up the windrowed crop.

Buck rakes of the pushoff type are a great help, particularly in the filling of horizontal silos and for handling long grass silage.

Blowers are essential for filling upright silos. Clogging is the chief hazard with this implement. But clogging can usually be avoided by keeping the speed high and the forage fairly short. Clearance between tip of the fan blades and the blower housing should be kept to a minimum: proper size pulleys should be used on tractor and blower: the governor on the tractor should be sensitive enough to respond immediately when more power is needed; and the end of the distributor pipe should always be kept well clear of the forage in the silo.

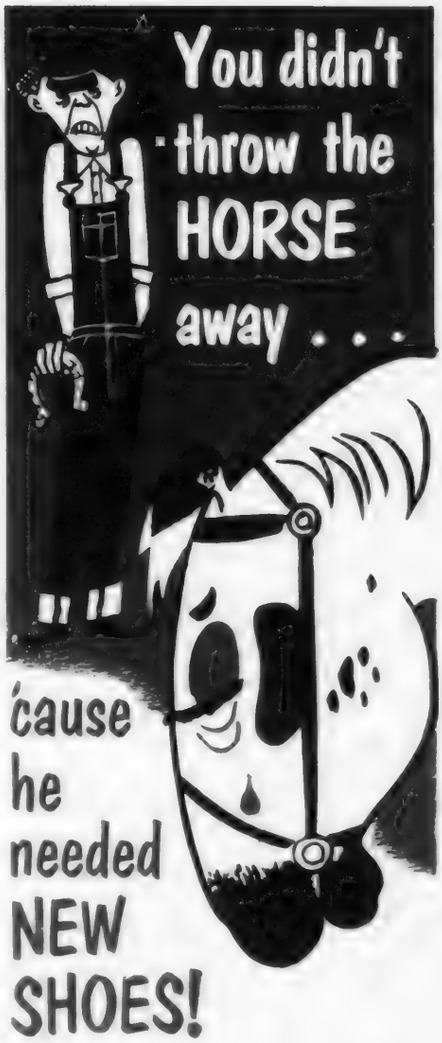
A recent innovation in the field of silo filling is the silage distributor. This device, mounted on a catwalk at the top of the silo and just below the filler pipe distributes the silage evenly and causes it to pack uniformly. It completely eliminates the need for having a man in the silo during filling.

Elevators, too, have been adapted to silo filling. Powered by a three- to five-horsepower electric motor they have about the same capacity as a blower and are not troubled by clogging.

For feeding: A farmer can probably get along without an unloader if he uses a tower silo, but the time and backaches saved by the $1000 to $1500 invested in one of these electrically operated machines is almost inestimable. A flick of the switch, an adjustment of the winch to set the cutter blades at the right depth in the silage, and a man can walk away and do his other chores while the silage comes tumbling down the chute.

Revolving feed bunks are another development that makes silage feeding practically automatic. William Thiessen, a central Minnesota farmer, has a system of this kind with which he feeds some 3½ tons of silage daily to 100 head of beef and dairy cattle. A flip of the switch starts the unloader in operation and the falling silage lands in a revolving bunk at the foot of the silo. "This saves me about two hours a day" is Thiessen's estimate, "and I feed several times a day so the cattle have silage before them practically all the time. That's the way silage should be fed."

Another innovation is the adaptation of barn cleaners to silage feeding. Arranged



The same is true with tractor tires. The casing, like the horse, is your big investment. You can give those worn tires new traction with Vacu-Lug! Using this revolutionary process, new lugs are vulcanized to the casing to hold like a weld.

Yes, Vacu-Lug gives you new tire performance at half the cost of quality new tires. It offers the two most important ingredients for a successful product — performance and price. The Vacu-Lug Process has been approved by leading laboratories, farm bureaus and the United States Department of Agriculture. Vacu-Lug is convenient — there's a shop near you!

BEFORE
Examine your tires, both on your tractors and other farm equipment. If the lugs are low and rounded, you are not getting full power and performance from your equipment.

AFTER
High, square-shouldered lugs have replaced worn ones. Now you can get full power and performance from your equipment and save money due to power loss from worn treads.

Cuts and breaks in casings can be repaired at the same time the tire is relugged. Bring in those worn casings for a free inspection.

FOR THE NAME OF YOUR NEAREST VACU-LUG SHOP WRITE:

VACU-LUG PROCESS
Turns the Earth

AMERICAN TIRE MACHINERY, Inc.
Muncie, Indiana

Balanced-Bred

for heavy steady egg yields... with high livability

HUBBARD'S NEW HAMPSHIRES

They live, grow fast, mature early into heavy producers of large eggs with high laying house livability. An efficient egg producing strain that will make you profits. Also egg production and meat crossbreds available. Send for catalog.

FREE BREEDING CATALOGS

Hubbard Farms, Box 35
Walpole, N. H. Please send your free catalogs on Hubbard Breeding.

☐ For Eggs ☐ For Meat

Name_____

Address_____

Town_____ State_____

MAIL COUPON TODAY!

for extra farm income

RAISE GAME BIRDS FOR PROFIT

Here's a good opportunity to add a profitable, part-time crop to your farm. Today there is a rapidly increasing demand for confinement-reared pheasants, quail, chukars and guinea fowl for these established markets:

1. High-class meat consumption.
2. Supplying birds for restocking purposes and for private shooting preserves.
3. Producing game bird eggs or chicks for breeding stock.

If you're interested in this promising business opportunity, as a part-time or full-time crop on your farm, write for Purina's New Game Bird Book. It's free and contains a complete outline of how to raise game birds and develop a profitable market for them.

RALSTON PURINA COMPANY
2108 Checkerboard Square
St. Louis 2, Missouri

Please send me a free copy of Purina's New Game Bird Book (SP2809).

Name.....

Address.....

City.....*State*.....

in feed bunks with the silo at one end of the bunk, the silage can be pushed along from the foot of the silo to the end of the bunk, again with no more human effort than button pushing or switch flipping. The system works equally well inside or out.

For trench, stack or bunker silos, self-feeding is the ideal system, especially if the silo has a solid floor and an all-weather approach and is handy to the barn. In other situations a front end loader, or manure scoop, or the Farmhand type of forage fork which bites big chunks of silage out of the pile becomes all important. Where the haul from silo to feed bunks is short the loader itself is used to carry the silage. Where the distance is longer, for example on the Renk farm at Sun Prairie where several hundred head of cattle in different feed lots are being fed out of one centrally located 2500-ton trench silo, the silage is picked up with a scoop and loaded into self-unloading wagons and trucks which make the trip to the feed lots and auger the silage into the bunks.

While these are, in general, the ways to make and feed grass silage, the variety of methods is limited only by the number of farmers who try it.

Upright or Horizontal?

One of the biggest debates on the silage front right now is which is the better kind of silo, tower or trench, or one of the other horizontal adaptations, the stack or the bunker. For practical purposes the stack should be considered for what it is, an entirely temporary measure to salvage a crop that would otherwise go to waste. Spoilage is very high, particularly on the smaller stacks, which have a high ratio of exposed surface to total capacity. Feeding out of them is a mean, sloppy job, too.

But the well-made trench or bunker (a horizontal above ground silo with concrete or wooden sidewalls) with a concrete floor is a practical and efficient piece of equipment. Its chief selling point is price, and, for the big operator, the fact that it is a mass production tool. No one who is going to feed over 300 tons of silage a year can afford to ignore this type of installation. And it has frequently been said that anyone who feeds less than this had better stick with an upright.

Concrete is an absolute must for the floor of any type of horizontal silo. It is simply the difference between a silo and a mud hole. But a really good, concrete floored and lined horizontal silo can easily be built for $3.50 per ton of capacity and many are being built for a third of this figure.

The upright, on the other hand, is still a symbol of security and efficiency, a tool that a farmer can handle with pleasure and profit. The average 12 x 40 tower of about 100-ton capacity, built of steel, concrete stave or tile, will cost about $1500, including roof and chute. This is a building with a long life, low maintenance

SPRINGFIELD

TILLER

Big 2 h.p. SPRINGTIL model. Tines guaranteed for life. Non-winding. Easy to control. 7½" to 21½" tilling widths. Converts to roller, aerating tool, edger, furrower.

SEND FOR FREE 1955 CATALOG.

Quick Mfg. Inc.,
3246 E. Main St.,
Springfield, Ohio

Join the ranks of Successful Breeders Using—

BREEDER-ADE® OIL

...for surer pregnancies ...for better young

Follow the lead of successful breeders in all parts of the country—feed Breeder-ADE Oil before mating. This blend of carrot oil, wheat germ oil and "D" activated animal sterol successfully combats nutritional sterility.

4 oz. only $1.80 postpaid

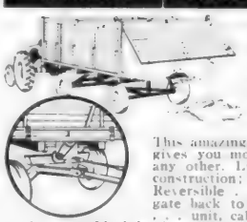
Put Breeder-ADE Oil in feed of horses, cattle, swine, dogs, poultry and fur-bearers. Dosage varies according to size of animal—follow simple directions in Bulletin 23 sent in each package. Orders shipped same day received. Send check or money order for $1.80. Money back if not satisfied. Breeders who have tried it reorder year after year.

NUTRITIONAL RESEARCH ASSOCIATES
SOUTH WHITLEY, INDIANA

Department A-3, ®Trade Mark

FOR ALL WORK IN FIELD OR BARN LOT

PREWITT WAGON UNLOADER



Unloads into any trench silo, blower or elevator. Powered direct from the tractor's power take-off. Works at the speeds you desire. The complete unit fits under front of wagon.

This amazingly low-cost wagon unloader gives you more desirable features than any other. Lightweight; Simple, sturdy construction; Completely safe to operate; Reversible . . . easily pulls false end gate back to front of wagon; Complete . . . unit, cables and hardware for both end gates; Ideal for handling silage, chopped hay, corn and other grains. Write today for low prices and FREE literature.

J. R. PREWITT & SONS

10A PREWITT BLDG. PLEASANT HILL, MISSOURI

UNIVERSITY TESTED

Universally Approved FOR SAFETY AND FLAVOR!

Only the SAFGARD PRES-VAC *Milk and Cream* PASTEURIZER

MODEL P-3000 f.o.b. factory $37.50
Cap. any amount up to 2 gallons

UL assures completely *safe* milk with *natural flavor*. This has been proved by phosphatase and other scientific tests made by the Dairy Technology laboratories of a prominent university.

The SAFGARD'S faster *pressurized heating* and complete *all-over* water bath thoroughly destroy all harmful bacteria. *Vacuum-sealed cooling* keeps in all the natural flavors and health-giving vitamins. *One year guarantee.* Ask your dealer for the SAFGARD Pasteurizer. For FREE descriptive circular write Dept. 3-FQ

SAFGARD DIVISION GRAND SHEET METAL PRODUCTS COMPANY
MELROSE PARK, ILLINOIS

charges and a high rate of protection against crop spoilage. And on top of that when there is a chill wind blowing and the rain is pelting down, the man in the tower is inclined to breath a sigh of comfort and pity the poor fellow in the trench.

Observations made over a period of years at the Beltsville, Maryland, Experiment Station show that in tower silos losses from surface spoilage, fermentation and seepage may be expected to run from 12 to 23 per cent, depending upon the moisture content of the forage. In trench silos they will run from 18 to 27 per cent, while in stacks the losses can be expected to be from 30 to 34 per cent.

Making a Horizontal Silo

While the trench, the completely in-the-ground type of silo is the most commonly thought of kind of horizontal construction, this is only one of a variety of types. A trench silo can be entirely in the ground, half in—half out, or it can be almost entirely above ground with earthen walls mounded up on the sides.

For a typical installation let's take a look at the half in, half out job on the farm of John Kennell near Eureka, Illinois. Kennell farms 223 acres, about 70 of which are in grass, and he milks 27 dairy cows. He decided that the spot for his silo was a bank sloping away from the back of his barn. A Caterpillar tractor with a bulldozer blade was hired to dig into the upper end of this bank to a depth of 10 feet and the dirt removed from the trench was stacked along both sides of the lower end to form the trench illustrated on page 35. When completed the silo was 80 feet long, 18 feet wide at the bottom and 22 feet at the top. Its estimated capacity is about 300 tons.

A 4-inch cement floor was poured in the bottom with a 4-inch crown to provide drainage to the sides and the entire floor was graded with a slope of 2 feet to 100 feet toward the lower end. The upper end was sloped 1 foot up for every 3 feet horizontal to make a ramp for the equipment used for filling, and the sidewalls were sloped 1 foot out to 3 feet up. The walls were lined with plastered-on concrete. This 1 to 3 slope made a good working surface for application of the concrete.

Before the concrete was plastered on the sidewalls, sisalkraft paper was laid next to the dirt to prevent absorption of moisture from the concrete. Wire reinforcing mesh laid over the top of the paper was held in place with staples made of pieces of number 9 wire pushed into the dirt.

A 1-2-3 mix of concrete with one sack of hydrated lime added to each two sacks of cement was used for the plastering.

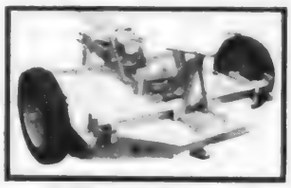
Cost figures on the completed silo were:

Digging—9 hours @ $13	$117.00
Floor—12 yards of Ready Mix plus labor	172.68
Reinforced plastered sidewalls, material and labor	586.54
Total	$876.22

Prepare for greater profits per acre!

LILLISTON ROTO-SPEED 7 -SIX

ROTO-SPEED 5-TWO Lift model for hydraulic hitch trac-rotary cutter. Cuts fast, cuts clean. Trail wheel moves in any direction.



ROTO-SPEED 5-TWO Tow Two-position wheels (side or rear). Adjustable tractor hitch. Enormously powerful "ax-head" blades.

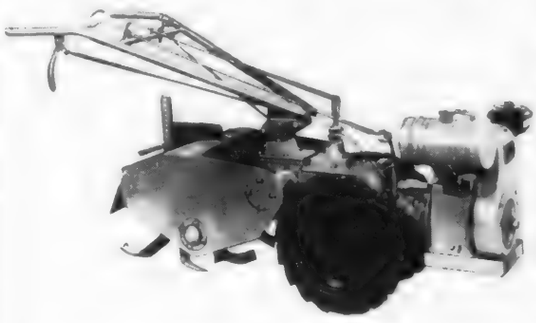
Clears your land fast . . . gets it ready for cultivation . . . helps insure maximum production! The ROTO-SPEED mows pastures, clips weeds and vines, shreds stalks, cuts and distributes stubble, clears brush and heavy undergrowths . . . with amazing ease. More than that, its powerful rotary blades reduce cuttings to a fine mulch, help condition your soil. Big, rugged — built to take it. Three pairs of rotary blades cut a 7½ foot swath.

TRY THE ROTO-SPEED YOURSELF. Your Dealer Will Be Glad to Give You a Demonstration without Obligation. WRITE FOR FULL INFORMATION

LILLISTON IMPLEMENT CO. | ALBANY GEORGIA

NEW! ARIENS **trans-A-matic** ROTARY TILLER

. . . with automatic differential — the most sensational power drive improvement since rotary tillers were invented — and only Ariens has it!



Here's the easiest turning, steering and operating you've ever known! Ariens new heavy duty TRANS-A-MATIC Tiller has a revolutionary new power principle in its ball and cam differential with automatic lock and unlock . . . new improved operating controls . . . new, instantaneous horizontal and vertical single lever handlebar adjustment . . . new tiller drive and tine design . . . new snaplock depth control. Two models: 8.1 h.p. Wis. engine (20" tillage width); 14.6 Wis. engine (28" tillage width). Two speeds forward; reverse. See Ariens TRANS-A-MATIC Tiller before you buy—you'll be glad you did! Visit your dealer or write.

Ariens COMPANY • 117 CALUMET STREET, BRILLION, WIS.

2-WAY

LIGHTNING

PROTECTION

FOR FARM BUILDINGS

Lightning still starts three-eighths of all farm fire losses—more than twice as many as any other cause. Water piping and electric conduit, steel tracks and air ducts, all add extra hazard in modern buildings.

Security System does more than divert lightning strokes—it is engineered to *prevent* lightning from striking. Among thousands of buildings fully protected by Security, not one has ever been destroyed by lightning. With the modern low aerial points, Security System is nearly invisible.

GREEN GUARD Lightning Arrester

FOR ELECTRICAL APPLIANCES

protects lamps, motors, ranges, hot water heaters from surges induced by lightning. Prevents flashes induced in outlets, switches. No moving parts—nothing to wear or burn. Guaranteed five years; should last a lifetime. Get the full story now on both Security System and Green Guard.

Address Security Mfg. & Contracting Co., Burlington 5, Wis.

SECURITY

Lightning Protection in the Modern Manner

With an estimated capacity of 300 tons this brought the cost per ton of capacity to $2.92.

Kennell self-feeds his herd from this trench by means of a V-type movable wooden gate very similar to the pipe gate shown on page 35. Since the cows have access to the silage at all times under such a setup, it is estimated that the feeding space needed is one foot for every 2 to 2½ cows. In self-feeding beef cattle an estimate of one foot for every three head is used.

One of the fine points of self feeding is to provide plenty of loosened silage for the stock. They should never be forced to gnaw the silage out of the stack. To cut a transverse section out of the stack and throw the silage into a trough formed in front of the gate Kennell uses a "jabber" made from a rolling coulter disk to which is attached a one inch rod about four feet long. Ten to fifteen minutes of chopping with this tool twice a day will furnish enough loose silage to keep the herd eating to capacity on an "all they want" basis.

The bunker type of silo has an advantage over the trench—it can be placed anywhere on the farm regardless of ground contour. The Harper-Sauder farm near Eureka, Illinois, uses a bunker silo adjacent to a pole type self-feeding barn for handling a herd of about 100 head of feeder calves. This silo is 96 feet long, 32 feet wide at the bottom and 6 feet high. It cost about $1000 and has a capacity of more than 350 tons of silage.

Building a Bunker

To make a bunker of this type, two parallel trenches are dug for the base of the sidewalls. The trenches are 16 inches wide and 2½ feet deep. Pressure treated poles 10½ feet long with a minimum top diameter of 6 inches are then set in the trench in holes that are 2 feet deep (so the poles are actually 4½ feet in the ground) and are slanted out 1 foot for 6 feet up. The poles are set 4 feet apart.

After the poles are set, the concrete floor is poured—usually a 4-inch floor—and the trench is filled with concrete to become an integral part of the floor. Tongue and groove siding is then spiked to the poles and the silo is made.

Getting back to the trench silo, there are some kinds of soil in which it may not be necessary to line the walls. If lining is needed, however, there are a variety of ways in which this may be handled. In one section where an old interurban line was torn up recently, farmers were able to buy old ties very cheaply, which, when stood on end against the earth bank made good lining.

In concrete, the plastered-on wall seems to be the cheapest type of construction. Poured-in-form walls will run higher than the plastered-on kind; pre-cast slabs, poured in forms in the bottom of the trench and then raised against the sides

DIG HOLES

SITTING DOWN

FENCE POSTS • FOUNDATIONS • SEEDLINGS
TRANSPLANTING • MANY OTHER USES

A Danuser Digger will save you time, labor, and money on every earth drilling operation. Augers from 4" to 24" dig holes for all purposes in less than a minute each. Satisfied users report over 500 holes per day. Simple, one-man operation. Strong, durable construction. Tested and approved by tractor manufacturers

WRITE FOR LITERATURE pertaining to your model tractor.

Manufactured by

DANUSER MACHINE CO.

505-09 East 3rd Street • Fulton, Missouri

"Contributing to Farm Mechanization"

COUGHS DUE TO COLDS

among horses, mules, cattle, sheep and dogs call for treatment with SPOHN'S COMPOUND. A stimulating expectorant. Acts on throat and bronchial tubes to hasten relief. Used by world-famous horsemen for 55 years. At drug stores, or direct, postage paid, $1 & $2.

SPOHN MEDICAL CO., BOX 14, GOSHEN, IND.

SPOHN'S COMPOUND

FOR COUGHS DUE TO COLDS

FORMULA FOR PROFITS

ONE-MAN PACKAGED FEED PLANT

Shown with 500-lb. Batch Mixer, 10" x 10" Krimper-Kracker and 14" Rotary Knife Granulator. Other sizes 100 lbs. to 6,000 lbs. Any item available separately. Also molasses attachment. CRIMPS, GRANULATES DUST-FREE and operates with small motor or tractor. Discharges correctly balanced rations into bags or trucks. No millwright work or installation cost. PUTS YOU IN THE DRIVER'S SEAT in any livestock feeding program. Users everywhere because it's deliberately priced to sell. Write TODAY for free samples and catalog.

DAVIS BUILT MCD SINCE 1894 H. C. DAVIS SONS'

Dept. FG-185 BONNER SPRINGS, KANSAS

ADVERTISING INDEX • SPRING 1955

Your Guide to Quality Merchandise and Service

Aerovent Fan Co. 146
Allied Mills, Inc. 9
Allis Chalmers Co. 31
American Agricultural Chemical Co. 75
American Corriedale Assoc. 134
American Guernsey Cattle 96
American Hampshire Sheep Assn. 142
American Milking Shorthorn Society 121
American Potash Institute 94
American Shorthorn Breeders Assn. 138
American Society of Farm Mgrs. 116
American Tire Machinery, Inc. 147
W. R. Ames Co. 91
Anchor Serum Co. of Ind. 144
The Arcair Co. 140
Ariens Company 149

Babson Bros. Co. 4
Baird Machinery Co. 146
Barnes Mfg. Co. 139
Behlen Mfg. Co. 140
C. S. Bell Co. 147
Black, Sivalls & Bryson, Inc. 108
The John Blue Co. 92
Bostrom-Brady Mfg. Co. 134
Bountiful Nurseries 128
N. P. Bowsher Co., Inc. 116
Bridgeport Implement Works 128
Brillion Iron Works, Inc. 24
Burch Plow Works 99-141
Burlingame, Field, Pierce & Browne, Inc. 84
Butler Mfg. Co. 114, 115

Campbell Hausfeld Co. 91, 98
Carver Pump Co. 100
J. I. Case Co. 11
Caterpillar Tractor 22
Century Engineering 132
Champion Corporation 101
Choremaster Division 100
Cizek Mfg. Co. 140
Clay Equipment Corp. 103
Clayton & Lambert Co. 137
Cobey Corporation 135
Construction Machinery Co. 120
Continental Motors 90
Craine, Inc. 132
Creighton Bros. 140
Cushman Motor Works 152
Cyclone Seeder Co. 145

Danuser Machine Co. 116, 150
H. C. Davis & Sons 150
Deere & Co. 6
DeKalb Agricultural Assn. 16
Deming Co. 131
Donne Agricultural Service, Inc. 99, 136
Dow Chemical Co. 125
Duplex Mill & Mfg. Co. 144

Early & Daniel Co. 90
Eaton Mfg. Co. 20
Edwards Laboratory 108
Cheston L. Eshelman 142
Eversman Mfg. Co. 98

Farmers Book Club 144
Farmer Feeder Co., Inc. 142
Farm Want Ads 125
Farmhand Co. 106
Ferguson Massey Harris Co. 12
Ferndale Farms 140
Fitchburg Eng. Corp. 117
Ford Tractor & Implement 3
Ford Truck Division 80, 81
Fox River Tractor Co. 127
Webber C. French Mfg. Co. 133
Fuerst Bros. & Co. Ltd. 96

Gehl Bros. Mfg. Co. 123
General Chemical Div. Allied Chemical & Dye Corp. 145
Golden Rule Hatchery 132
The B. F. Goodrich Co. 74
The Goodyear Tire & Rubber Co., Inc. Second Cover
Gormann-Rupp Co. 105
Gravely Motor Plow 139
Grazing Fields 132

Hahn, Inc. 131
Hall Bros. Hatchery, Inc. 126
Hammer Blow Tool Co. 144
Hardie Mfg. Co. 145
Hartzell Propeller Fan Co. 142
The Heil Co. 88
Helix Corporation 118, 152
John W. Hobbs Corp. 134
Holstein-Friesian Assn. 132
Hotchkiss Steel Products 133
Hubbard Farms, Inc. 148

International Harvester Co. 1
International Minerals & Chemical Corp. 128
Irrigation Equipment Co. 102

Jacuzzi Pump Co. 116
James Mfg. Co. 109
Jari Products Co. 98

Kelsey-Hayes Wheel Co. 28
Ketchum Mfg. Co. 132
King-Wyse Inc. 85
Krause Plow Corp. 95

L. M. L. Engineering & Mfg. Corp. 134
Lantz Mfg. Co., Inc. 85, 146
Lederle Lab-American Cyanamid Co. 30
Henry Leuthardt Nursery 136
Lilliston Implement Co. 149
Eli Lilly & Co. 112-113

Marlow Pumps 92
Martin Steel Corp. Third Cover
Massey Harris Co. 17
Olin Mathieson Chemical Corp. 97
Kilby-Mayner Company 138
Mayrath Inc. 129
McCullough Motors 12
McDowell Mfg. Co. 104
Merchants Creamery 129
The Meyer Mfg. Co. 132, 116, 142
Midwest Wire & Steel Co. 84
Minneapolis Moline Co. Back Cover
Mojonnier Bros. Co. 117
Moulton Irrigation Co. 119
Musser Forrest, Inc. 141

National Agricultural Supply Co. 98
National Band & Tag Co. 131, 140
National Cooperatives 124
National Farm Equip. 128
National Rainbird Sales & Eng. Corp. 111
New Holland Machine Co. 14, 15
New Idea Div. AVCO Mfg. Corp. 26, 27
Niagara Chemical Div. 130
Nitragin Company 143
Nitrogen Div. Allied Chemical & Dye Corp. 107
Nutritional Concentrates 72, 73
Nutritional Research Assoc. Inc. 148
Nut Tree Nurseries 134

D. W. Onan & Sons, Inc. 147
Opeksit, Inc. 138
Oshkosh Filter & Softener 142
Owatonna Mfg. Co. 102

Palsgrove Mfg. Co. 144
Papec Machine Co. 152
Pax Steel Products 123
Peirson-Moore Co., Inc. 143
Perfect Circle Corp. 10
Pioneer Hi-Bred Corn Co. 82
Pittsburgh Forging Co. 8
Potash Rock Co. of America 87
J. R. Prewitt & Sons 148
Proto Tool Co. 7

Quick Mfg. Co. 148

Ralston Purina Co. 148
Reynolds Metals Co. (Irrigation) 83
Reynolds Metals Co. (Alumi-Drome) 93
Rilco Laminated Products Co. 151
Roto-Hoe & Sprayer Co. 141

Safgard Division 148
Scott's Farm Seed Co. 135
Joseph E. Seagram & Sons, Inc. 5
Seaman Motors, Inc. 121
Security Mfg. Co. 150
Shawnee Mfg. Co. 126
Shur-Rane Irrigation Corp. 2
Skinner Irrigation Co. 120
D. B. Smith 121, 128
Smith Agricultural Chemical Co. 118
Spohn Medical Co. 150
Spred-All Inc. 86
E. R. Squibb & Sons 25
Starline Inc. 133
State of Florida 122
Sudbury Laboratories 19
Sunbeam Hatchery 146

Tiger Tractor 98
Tokheim Oil Tank & Pump Co. 122
Towner Mfg. Co. 123

United States Steel Corp. 21
United Steel Fabricators 130
Univator, Inc. 144

Valley Mfg. Co. 23
Versennes Inc. 129
Vickers Inc. 18
Jos. A. Vogel Co. 152
Vulcan Hart Mfg. Co. 144

R. M. Wade & Co. 110
Westcoast Lumberman's Assn. 29
Wagner Iron Works 143
Western Land Roller 122
Western Farm Management 142
Gilbert H. Wild & Son 146
Wisconsin Alumni Foundation 146
Wisconsin Motor Corp. 84
Wood Bros. Mfg. Co. 98
Wyeth, Inc. 89

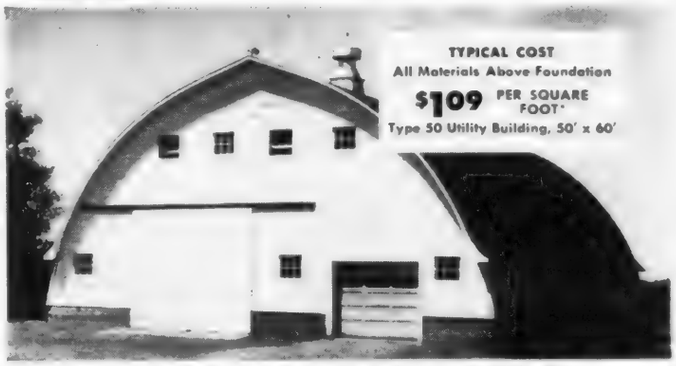
Yardley Plastics Co. 126

Farm Quarterly, 22 East 12th St., Cincinnati 10, Ohio

Advertising Offices: EASTERN OFFICE, Harold C. Weltner, 38 W. 53rd, New York 19, N. Y.; MIDWEST OFFICE, Charles W. Anderson, 532 South Highland Ave., Arlington Heights, Ill.; DETROIT, Waldo E. Fellows, Stephenson Building; WEST COAST OFFICE, Ed Kerr, 3028 West Beverly Blvd.; Los Angeles 4, Calif.; ADVERTISING MANAGER, Harry Dunnohew, 22 East 12th St., Cincinnati, Ohio. Publisher: Automobile Digest Publishing Corp., Aron M. Mathieu, Vice President. Member A.B.C.

WM. SIPPLE
Lafayette, Indiana

I needed space fast... and got it...thanks to RILCO!



*Price based on first quality materials, and will vary according to locality.

● After a storm on April 3, Mr. Sipple urgently needed space for hay and machinery. "I chose a Type 50 Rilco Utility Building," says Mr. Sipple, "and really got it up in a hurry. Speed of erection, beauty and strength were important factors in my decision to build with Rilco!"

These factors are highly important to any farmer considering new buildings. Rilco rafters are precision cut, pre-drilled for hardware, delivered ready for quick assembly, complete with connection hardware. Made of selected, kiln-dried West Coast Douglas Fir, permanently bonded with waterproof glue, Rilco rafters will give you the handsome, sturdy, storm-resistant buildings you want!

RAYMOND DOANE
Menomonie, Wisconsin

RILCO helped me out of a jam, too!

*Price based on first quality materials, and will vary according to locality.

"My old barn burned October 17. By November 10th, I had my cattle moved into a brand new Rilco barn. The ease and quickness of erection saved me money and I certainly like that unobstructed mow space!" So says Raymond Doane, Menomonie, Wisconsin. For more space, more value . . . make it Rilco! Mail coupon for more facts!

For your protection and convenience, sold only through your local lumber dealer.

RILCO GLUED LAMINATED RAFTERS

RILCO LAMINATED PRODUCTS, Inc.
2508 First National Bank Bldg., St. Paul 1, Minn.

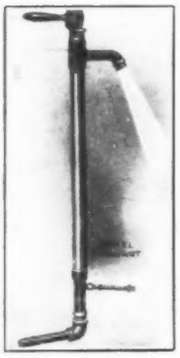
● Please send new free Rilco Barn Catalog and information on following farm buildings:

☐ Two-Story Barns ☐ Machine Sheds
☐ One-Story Barns ☐ Hog and Poultry Houses

*Name*_____

*Address*_____

*Town*_____ *State*_____



VOGEL
PATENTED

FROST-PROOF HYDRANT

- Will never freeze when properly installed.
- Provides complete fire protection by assuring running water even in coldest weather.
- Guarantees adequate water supply for live stock.
- Over a million Vogel Frost-Proof Valves have been sold.

The handle in this position shows at a glance that the water is positively shut off and is your guarantee against leakage and freezing.

VOGEL
PATENTED

No. 4 FROST-PROOF CLOSET

Will never freeze. A great convenience when installed in an outbuilding or on a rear porch of a residence.

A real water saver. Vitreous china bowl is durable and easy to keep clean and will never freeze. No mechanism in tank to get out of order.

JOSEPH A. VOGEL CO., Wilmington 99, Delaware

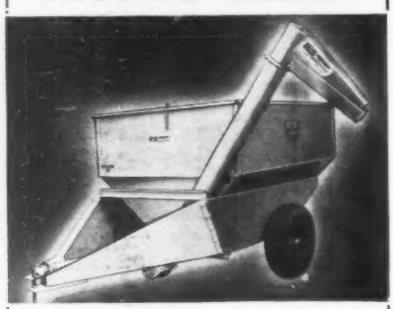
Joseph A. Vogel Co.
Wilmington 99, Del.
Please send information on Vogel Frost-Proof Closets and Frost-Proof Hydrants

NAME .....

ADDRESS .....

TOWN .....STATE.....

MAKES FEEDING, HAULING EASIER



$295 F.O.B. FACTORY
Less Tires

For filling feed bunks (either side), upright feeders, grain bins. Excellent for relay from combine or picker sheller to bin, transporting grain to elevator. Spout swivels 360 deg.—use as batch mixer. Also for bulk fertilizer—unload direct into spreader.
Capacity 83.2 bushels. For light weight or bulky feeds or grain 1 ft. extensions can give 100 or more bushel capacity. Sturdy. All steel. 10 gauge frame, heavy gauge V bottom and sides. Complete with rotating shield PTO shaft. Standard 8 ft. auger elevator—front mounted. Extensions can be added to any height for unloading into bins. 15 in. rims.

HELIX CORPORATION Dept. 2-H, Crown Point, Indiana

Please send me information on new all steel auger box.
Name.....
RR.....
City and State.....

are the next most expensive form, and concrete blocks make a fine lining but are by far the most expensive.

The shotcrete process by which concrete is blown onto the dirt wall by pneumatic pressure has also been tried for silos and seems to be quite satisfactory. The big 2500-ton Renk trench silo mentioned earlier was lined in this manner. Costs are hard to estimate. The job must be done by a contractor using experienced help. Walter Renk estimates that he saved about $2000 over the cost of poured-in-form walls.

A Few Rules

Because silage in a horizontal silo must be very well packed with tractor or truck, none should be built less than 10 feet wide so the entire width can be packed evenly from center to sides. A good wide berm on top of the walls of a built-up earthen bank silo is also a help in packing.

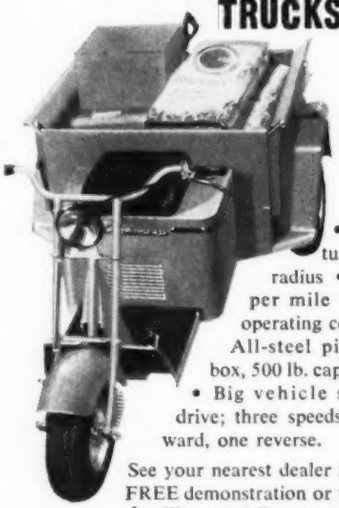
The top layers of silage should be arched in the center and after the filling has been completed the entire mass should be covered with earth, ground limestone, sawdust or corn cobs. Corn cobs in particular, make an excellent cover as they absorb water like a blotter. Covering is essential and a good job of covering will reduce surface spoilage to practically nothing.

The Monsanto Chemical Company has recently come out with plastic sheets that can be spread over the top of the silage. They do a good job of keeping out air and water, can be used for two seasons if handled carefully, and cost about 4 to 5 cents per square foot.

Cows will eat about 6 pounds of grass silage per 100 pounds liveweight per day if hay is fed with the silage, and about 8 pounds if no hay is fed. So a 1000-pound cow will eat 60 to 80 pounds a day. Using these figures, times the number of cows in the herd, times the number of days in the feeding period, a man can arrive at an estimate of the amount of silage it will take to carry his herd. For example, 30 cows eating 80 pounds a day would consume 2400 pounds a day, or 360,000 pounds during a 150 day feeding season. That's 180 tons.

Then to figure the size of the horizontal silo needed, multiply the average width by the average depth by one for cubic feet per running foot. Multiply this figure by 40 (40 pounds per cu. ft. is the average weight of packed grass silage) to find the pounds per running foot capacity of the silo. Divide this figure by the number of pounds required for the herd for the feeding period. To this should be added half the horizontal length of the slopes at each end to get the overall length.

modern workhorse | Cushman 780 SHAFT DRIVE TRUCKSTER



- 80" turning radius • ¾¢ per mile total operating cost • All-steel pickup box, 500 lb. capacity • Big vehicle shaft drive; three speeds forward, one reverse.

See your nearest dealer for a FREE demonstration or write for illustrated literature.

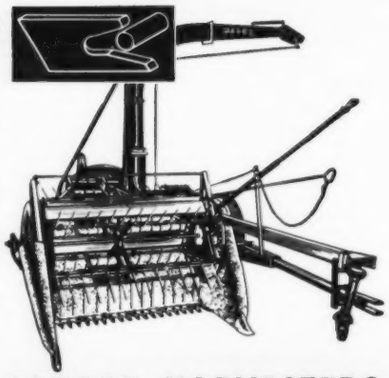
CUSHMAN MOTOR WORKS, inc.
924 No. 21st St., Lincoln, Nebraska

MINUTE MISER!

PAPEC'S *NEW* QUICK COUPLE

Saves most of the time and labor involved in attaching and detaching direct cut, hay pick-up and row-crop attachments. Eliminates heavy lifting. Makes positive, rigid couple with forage harvester base units. Standard equipment on all 1955 Papec Forage Harvesters.

Only Papec gives you patented Finger Feed Roll, Heavier Cutting Wheel, patented Silage Shelf, Better Knives, Bigger Tires. Yet with all these features Papec Forage Harvesters cost less fully equipped than any other comparable make! Full information from your Papec dealer or send name on margin of this ad. Papec Machine Company, Shortsville, N. Y.



PAPEC FORAGE HARVESTERS

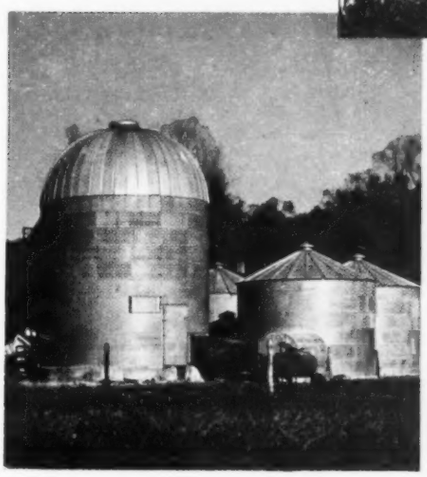
Plant 3 Profits INSTEAD OF ONE!

IT'S NO SECRET! Your biggest opportunity for greater yearly profits lies in your ability to utilize your present land to the best advantage . . . increase milk or meat production by using "home grown" grain and forage without buying expensive feed supplements.

Plant "wide-row" corn and reap 3 profits from the same field: 1 — a good CORN crop; 2 — nutritious, economical STOVER silage; 3 — RYE GRASS SILAGE — rye sown after corn is harvested will make a good silage crop the following spring. And, as a bonus benefit, legumes planted between corn rows are plowed down as a "green manure" soil builder.

Get all the facts in Martin's new booklet on how to get MORE CROPS PER ACRE. Write today!

Three money-making crops were harvested from this field in a single year.



Modern MARTIN storage and conditioning equipment permits you to harvest EXTRA-CROP PROFITS!

MARTIN HIGH ROUND CRIBS make it possible to harvest and safely store mature ear corn at high moisture content — when stalks are still high enough in feed value to make stover silage. Scientifically designed to provide the best, most practical and economical on-the-farm system of handling ear corn. Martin Harvest Hoarder Bins, the ideal on-the-farm storage structure for small grains and smaller capacities of ear corn are also pictured above.

MARTIN STEEL-BILT SILOS lock in ALL the valuable feed elements that make your silage juicy and succulent, more palatable and more nutritious — all-round BETTER FEED. Martin Silos are airtight to prevent any spoilage . . . leakproof, impervious to silage acids — last for a lifetime period — and actually GUARANTEED 20 years. Built to withstand the extreme pressures of grass silage. Full range of sizes.

MARTIN HAYMAKERS keep chopped hay at its peak of meadow-fresh quality. Let you mow before full bloom when plant nutrients are highest. Save ALL the LEAF — hay is field-chopped at high moisture and blown into the Haymaker before leaves are lost — to cure into sweet-smelling, tender, LEAFY, nutritious hay with more total digestive nutrients per pound. You get more milk or meat yet spend less for expensive feed supplements.

New 10¢ Booklet Tells HOW TO GET MORE CROPS PER ACRE

Write Today!

MARTIN

STEEL PRODUCTS CORPORATION

Mansfield, Ohio

Pioneers in the Design and Fabrication of Steel Buildings Exclusively for the Farm

MARTIN STEEL PRODUCTS CORP.
503 Longview Ave., Mansfield, Ohio

Enclosed is 10c for my copy of your new booklet on how to get More Crops Per Acre. Also send information on the following:

☐ Haymaker ☐ High Round Crib ☐ Arch Building
☐ Silo ☐ Harvest Hoarder Bin ☐ Utility Building

NAME _____ ☐ STUDENT

ADDRESS _____

CITY _____

COUNTY _____ STATE _____

54

TALK ABOUT PERFORMANCE!

...you get 45 H.P. at the drawbar...

...with the NEW 3-4 plow MM UB tractor

Hitched to the UB tractor, this Moline-Monitor grain drill covers ground at a profit-boosting clip. Accurate, uniform seeding starts your crop right.

This MM TFA Field Cultivator powered by the UB makes a combination that's death on quack grass and bind-weed . . . leaves your field ready to soak up and store rain.

Mount this MM 4-row cultivator on the UB and you're set for thriving row crops . . . bumper yields. Center-line steering lets you see your work on both sides of the tractor.

MODEL UB Tractors available in 3 front-end models . . . for gasoline or LP Gas operation. See your MM dealer for full profit facts.

Here's high-compression power that *never says no!* With full 45 horsepower at the drawbar, the new-power, new-performance Minneapolis-Moline UB tractor pulls 4 plows with ease in 9 out of 10 fields. In even the heaviest plowing, the UB handles 3 bottoms with plenty of reserve for hills or hard spots. High turbulence combustion and controlled pressure cooling let you drive the UB at full-power all day long, offer fuel economy that proves itself in money saved, money made.

EASIER TRACTOR DRIVING! LASTING TRACTOR POWER!

Behind the wheel of the UB tractor, you're *way up* out of the dust and heat; you have clear visibility on every side. Brakes, clutch, gear shift, and steering wheel . . . belt pulley, power take-off, and Uni-Matic control levers . . . throttle, choke, and ignition—*all* are handy to your reach. A powerful 12-volt electrical system, "new car" steering, shock-free "floating ride", and sealed split-beam lights are just a few of the many advantages that make the UB a *new* experience in tractor driving.

See for yourself how much *more* tractor the powerful new MM Model UB gives you. Ask your MM dealer *today* for a demonstration on *your* farm.

MINNEAPOLIS-MOLINE MINNEAPOLIS 1, MINNESOTA